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ABSTRACT

The Magnificent Mum Education Program is a theme-based program developed around the garden mum. With its bright colors, various flower forms, perennial life cycle, and easy propagation, the garden mum is ideal for classroom use and community planting programs. The mum-theme lessons can be integrated into all subject areas including science, math, reading, social studies, language arts, art, and environmental studies. This program is not meant to replace core curriculum but rather to reinforce basic concepts and to enrich lessons. Intended for grades 2-3, lesson plans cover the following topics: structure, function, and size; identification, comparison, and classification in the mum family; diversity and development; the life cycle of the mum; planting, pinching, and propagating; light and temperature; soil and soil helpers; water; plant helpers and plant harmers; getting to know the garden; and garden decisions and design. Basic information and tips for the teacher, creative projects, enrichment ideas, school and community projects, and reproducible worksheets are also included. The teacher resource kit includes stickers, a poster, a reference list, and fact sheets. (JRH)

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THE MAGNIFICENT MUM EDUCATION PROGRAM

ED 395 772

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GRADES 2-3

Featuring The Mum Kids

SP028 190

Background of the Program Sponsor
Yoder Brothers, Inc.
Barberton, Ohio

The development of materials for teachers and their students is consistent with the position Yoder Brothers, Inc. has achieved as one of North America's, and the world's, most respected horticultural firms.

From modest beginnings — a partnership of two, hard-working tenant farmers, Menno and Ira Yoder — the company has grown to be a leader in plant research and breeding. Today, G. Ramsey Yoder, Menno's grandson, heads a company of more than 2,200 employees that spans the globe.

World headquarters is in a former dairy barn, a historic landmark and one of the few remaining buildings of industrialist O.C. Barber's estate in Barberton, Ohio, where the brothers worked. The estate's 102 buildings included the largest greenhouse complex in the world at the time. With Barber's death, the brothers bought the greenhouses and in 1921 founded the company which bears their name.

Early crops consisted primarily of fruits, vegetables and some flowers. But with the discovery that fall-blooming chrysanthemums could be made to flower year-round in the greenhouse by manipulating daylight hours, Yoder's focus turned exclusively to flowers. As demand for quality floral products increased, Yoder phased out other crops and became one of the first horticultural companies to specialize in plant breeding.

The company is the world's leading breeder and propagator of high-quality chrysanthemum varieties. While mum cuttings — rooted and unrooted stems which Yoder sells to growers to nurture into finished flowering plants — remain the number one crop, the company also produces asters, azaleas, carnations, hibiscus, poinsettias, and other flowering plants.

Over the years, Yoder has provided generous quantities of information for growers and the public through colorful posters, brochures, booklets, push-on tags and consumer care and handling sheets. Articles about Yoder and Yoder products have appeared in national magazines, regional publications and newspapers throughout North America and many other parts of the world.

Background of the Authors and Artist
McGreen Wisdom, Inc.
Pittsburgh, Pennsylvania

The motto at McGreen Wisdom, Inc. is "knowledge to grow by." The company is dedicated to developing plant awareness and skills. Horticulture is viewed as a practical life skill rather than a hobby. It is a skill that should be strengthened along with the skills of science, math, and reading so that children can not only understand the growing world in general, but help it and communicate about it as well. To that end, the company produces practical materials to help children grow as students and, together with their families, grow as plant-smart citizens and earth stewards. McGreen Wisdom strives to bring together horticulture professionals and educators in cooperative programs that help to get practical materials and information into the hands of children.

McGreen Wisdom has a team of dedicated and experienced horticulturists. Christy Holstead and Pamela Linder are recognized for their knowledge of the technical and creative aspects of horticulture. Holstead has a master's degree in horticulture from Ohio State University and Linder is a member of the American Institute of Floral Design. They have co-authored a series of textbooks for Redbook Florist Services as members of its educational advisory committee and have written numerous articles for horticulture trade and consumer publications such as *SuperMarket Floral* and The Kid's Korner for *Houseplant Magazine*. Artist Bob Arlt is a graduate of the Art Center College of Design and brings a rich array of creative talents and a lifetime interest in nature to McGreen Wisdom. Prior to creating the ***Magnificent Mum Education Program***, the McGreen team published a children's coloring and activity book, "Learn About Growing Friendships with Little Bud," along with a supplementary Teacher's Guide. This was followed with the "Friendship Activity Book" to help horticulture educators at arboreta and other public gardens teach the concepts of being friends to flowers, plants, and trees.

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THE

MAGNIFICENT MUM

EDUCATION PROGRAM

GRADES 2-3

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INTRODUCTION AND TIPS FOR THE TEACHER

Welcome to the ***Magnificent Mum Education Program***! This is a theme-based program developed around the garden mum — nature's most popular fall flower. With its bright colors, various flower forms, perennial life cycle, and easy propagation, the garden mum is ideal for classroom use and community planting programs. The mum-theme lessons can be integrated into all subject areas, including science, math, reading, social studies, language arts, and art, as well as environmental studies and even fitness. We hope this program will inspire you to expand your use of all kinds of plants in teaching all kinds of subjects!

The ***Magnificent Mum Education Program*** is not meant to replace core curriculum but rather to ***reinforce*** basic concepts and to ***enrich*** lessons. What's nice about mums is that there are opportunities for year-round, plant-based activities. The ***Magnificent Mum Education Program*** can also be taught with a team-teaching approach. Teachers in different subject areas can utilize mum-based lessons. There are books available for three grade levels as well, K-1, 2-3, and 4-5, so that teachers in different grades can reinforce and build upon lessons from previous years.

Here are seven tips that will help to optimize the usefulness, efficiency, and impact of the program.

1. **Don't be afraid of using plants as teaching tools.** Even if you don't consider yourself a green thumb, you will be amazed at how well you will get along with mums. Everything you need to know to get started is included in the ***Magnificent Mum*** package.

2. **Keep it simple.** Gardening and other growing activities do not have to be expensive or time consuming. Many everyday items can be used as tools and planting containers so that you don't have to invest large sums of money in equipment. The children will be eager to help, too. They are fascinated by planting-related activities and will be glad to help with setup and cleanup.

3. **Be creative with space.** It is not essential to have lots of excess space to do planting activities. Just a sunny windowsill in the classroom or a nearby room is needed to get started. For outdoor planting projects, a small sunny patch of ground is all that is needed.

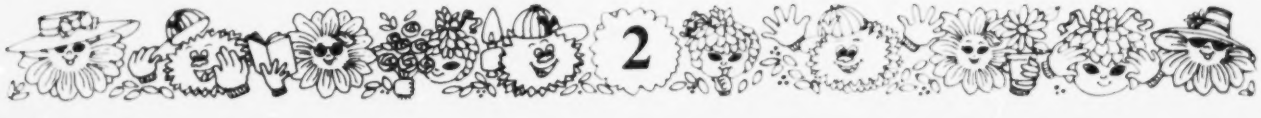
4. **Ask for assistance.** Cooperation is an important theme that is stressed throughout this book. Cooperation between classrooms, between the school and community groups, and between the school and horticulture professionals. We encourage you to approach local businesses, including garden centers, supermarkets, and florists, to ask for support in the form of funds, materials, presentations and professional advice. Show them a copy of this book and share ideas on planting and beautification to help strengthen your request for support. We also stress the importance of working with other children and adults to foster a spirit of cooperation. It makes the activities easier and more fun as well.

5. **Make use of the *MUM KIDS*.** Millie, Minnie, and Moe help bring lessons to life and make them fun. Let them serve as ambassadors to help inspire the children to appreciate plants and help beautify their world. Extend their use to writing stories, developing plays, creating posters, and even conducting contests. They can help to bring a multicultural message into the classroom as well.

6. **Reward the children.** Help establish "green self esteem" by rewarding children for finishing mum activities and expanding their plant knowledge. Use stickers to complete the certificates at the end of the program. Use stickers to reward exceptional projects and extra plant-related efforts as well. A local garden center might also want to help reward the children. Perhaps children can bring their completed certificates in to the store for a free plant or other special item!

7. **Get parents involved.** Try to encourage plant-related family discussions and activities to help reinforce lessons and make them more meaningful. Use the reproducible ***Parent's Pages*** to inspire parental involvement. Some parents will be glad to provide assistance with mum projects. This will be especially helpful during outdoor planting activities, festivals, and community projects.

Keep in mind: ***Everyone*** can grow plants! Plants don't need a lot of money, time, or space — just a basic understanding of their care and the sincere concern to want to nurture them. In turn, mums and other plants will beautify the land, enrich our lives, and teach us many lessons. Have lots of ***Mum Fun!***



GETTING STARTED

Supplies, Resources, Learning Center Setup

Plant Learning Center

A learning center provides a place for the storage and display of plants and supplies as well as a place for individual and small group hands-on learning.

Learning Center Tips

✿ Set up a display board on a long table. Fabric on the board can be changed with the seasons. Plants and books can be placed on the table. Supplies can be stored under the table.

✿ Display class art and signs of the seasons on the board. Have other signs of the season on the table (including stems from a garden mum in water) for children to touch and observe.

✿ Keep ***Mum Books***, ***Mum Boxes*** or ***Mum Bags, and Mum Badges*** stored at the center.

✿ Make ***Mum Markers*** to keep track of each child at the learning center. Make a large, full-page daisy pattern and reproduce enough to have one for each child. Write lesson numbers and a child's name on each Mum Marker. Children can circle the appropriate number when they complete a lesson.

✿ Start a ***Classroom Plant Collection*** and keep it on display in a sunny spot near the center. Teacher and children can bring in plants and cuttings from home so everyone can observe and enjoy them.

Supplies

A partial list of supplies to get you started is included. You will likely add your own supply suggestions along the way. You will also discover that many everyday items can become garden supplies. An old spoon can become a trowel. An old pot can become a planter. To obtain supplies, send a note home asking if parents have any old supplies to donate. Contact local growers and garden centers to find out if they would be willing to donate supplies. (Tell them that their names will be mentioned in articles submitted to school and community publications.)

A Starter List

Drip trays and saucers; Old nursery flats; Plant sprayers; Scissors; Commercial potting mix; Components to make-your-own-mix (peat moss, perlite, vermiculite); Trowels; Shovels; Flower pots and assorted containers (from yogurt cups to coffee cans); Plant labels; Watering cans (or old pitchers); Buckets; Hose; Garden twine/string; Wheelbarrow; Compost; Fertilizer; Magnifying glasses; Old spoons and forks; Thermometers for soil and air; Measuring spoons and cups; Popsicle sticks; Marker pens; Garden sticks for staking; Scale; Rulers; Newspapers; Butcher paper.

MUM MEMO #1

A *Classroom Chrysanthemum Cuttings Kit* is available from Yoder Brothers, Inc., to supplement activities in this book. The kit contains 50 rooted garden mum cuttings. The first kit is FREE with the purchase of this book. Simply return the reply card in the Teacher Resource Kit to get your Cuttings Kit. In future years, Classroom Chrysanthemum Cuttings Kits can be purchased by sending a check for $9.95 to: Customer Service, YODER BROTHERS, INC., P.O. Box 230, Barberton, OH 44203. *Please order Cuttings Kits by January 15 so that they can be shipped between March 1 and March 15. This is the only time of year cuttings will be shipped.*

MUM MEMO #2

A good source for an assortment of cut mum flowers and mum flower relatives (for Lesson 2, Lesson 3, and other activities you develop) is a florist's shop or supermarket floral shop. Inquire whether they would be interested in donating some fresh product for classroom use, or at the least, some product that is past its prime and will soon be discarded. Mum flowers can also be cut from a garden mum or pot mum plant that is being used for classroom activities.

Resources

Resources, such as books, catalogs and magazines, enrich plant lessons. Lessons would be less exciting and less enriching without them. A thorough list is provided with the ***Teacher's Resource Kit***. The resources are popular ones that are well-suited to beginning gardeners and are widely available at libraries, bookstores, and newsstands. Catalogs are frequently available free of charge from garden suppliers and offer a wealth of information and color pictures. A wonderful source, jam-packed with everything from lists of associations to garden supply companies, is ***Gardening By Mail*** by Barbara J. Barton, Houghton Mifflin Co., Boston.

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MUM TERMINOLOGY FOR THE TEACHER

Annual: A plant that completes its life cycle, from seed to seed, in one growing season (e.g. sunflower).

Biennial: A plant that completes its life cycle in two years. The first year, energy goes into forming roots and flowering takes place the second year.

Botanical Name: This is also known as the scientific or Latin name. It is a two-part name, with the first part being the genus and the second part being the species (also known as specific epithet). Botanical names are helpful because they do not vary, whereas common names can vary between catalog sources, regions of the country, and so on.

Common Name: The frequently used plant names. Often colorful and descriptive. May vary with usage, so botanical names are used for accuracy.

Compost: A mixture of organic matter, such as leaves, chipped wood, and lawn clippings, that has decayed into a dark, nutrient-rich mixture that enriches the soil and makes it more crumbly.

Cutting: Part of a plant that is cut off and rooted to produce a new plant as a form of vegetative propagation. Cuttings can be made from roots, stems, and leaves, depending on the plant.

Division: The process of dividing overgrown perennial plants into smaller sections. Garden mums should be divided every other spring.

Florets: Each small individual flower that makes up the flower head of composite flowers, like mums. (Florets may be mistakenly referred to as only petals, but they are complete flowers.) A daisy mum has **disk florets** in the center which are compressed and short to give the appearance of an eye. Longer, showier **ray florets** radiate out from the disk. A decorative mum may be composed almost exclusively of ray florets. An anemone has elongated disk florets which form a prominent center cushion.

Flower Form: Flower forms are variations in form due to variations in numbers, sizes, shapes, and arrangements of the individual florets. The four main flower forms for mums include anemone, daisy, decorative, and spider.

Loam: The ideal, well-balanced garden soil, it contains fairly equal proportions of the different particle sizes of sand, silt, and clay. It is sometimes referred to as "friable" because it breaks up easily, holds moisture well, and encourages organic activity.

Mulch: A substance spread like a blanket or covering over the ground around plants to maintain soil temperature, conserve moisture, add nutrients, and prevent soil from compacting. Common mulching materials include organic materials such as wood chips, straw, shredded leaves, and pine needles.

Organic Matter: Natural material used to enrich and improve the soil. Examples include compost, leaf mold, and peat moss.

Partly Shady: A partly shady location is a spot that receives three to six hours of direct sunlight per day.

Perennial: A plant, such as the garden mum, that completes its life cycle over the period of many years. Within each year, the plant dies back to the roots in the fall, the roots survive the winter, new shoots form in the spring, buds are formed and flowering occurs, then the top dies back again. A more accurate term for garden mums is actually "tender perennial" because they can be damaged by freezing temperatures and drying winds if not properly planted and protected.

Photoperiod: Term used to refer to the phenomenon of plants flowering in response to day length. Mums are known as short-day plants because they flower when the days are shorter. (There are twelve or more hours of darkness per day.)

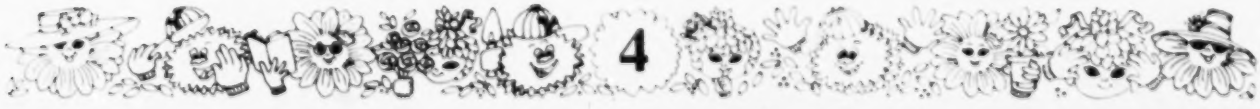
Pinching: The practice of removing the growing tips from shoots to encourage branching and development of compact bushy plants.

Shady: A shady location is a spot that receives two hours or less of direct sunlight per day.

Sunny: A sunny location is a spot that receives six hours or more of direct sunlight per day.

Variety: The variety is a subdivision of the species. Also called "cultivar." It is used to indicate variations (such as color and form) that have been developed in the wild or as a result of hybridizing (breeding) activities by people. The names may be descriptive or may even be people's names.

Vegetative Propagation: The act of producing a new, complete plant from part of another one using roots, stems, and even leaves.



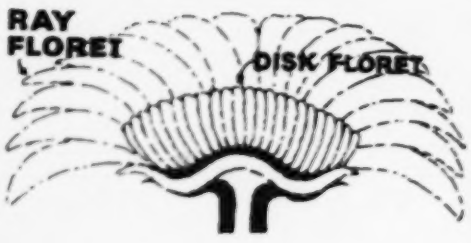
BASIC MUM INFORMATION FOR THE TEACHER

Flower Diagram, Classification, Life Cycle

Plant Classification

For many years, the scientific, Latin, or botanical name for chrysanthemum was ***Chrysanthemum x morifolium*** (Chrysanthemum being the genus and morifolium being the species). This name will be seen in most field guides and gardening books used by the class. Actually, someone made a mistake in classifying and naming the chrysanthemum several centuries ago. This was corrected recently and the mum was reclassified and renamed by botanists as ***Dendranthema grandiflora.*** The class may come across this new name in some sources. Most people still use the genus name Chrysanthemum, however, and the common or popular name "**mum**" will continue to be widely used. There are different types of mums. Mums that have been bred for use in outdoor gardens are "**garden mums**" and those that have been bred for indoor enjoyment are "**pot mums.**" There are also mums which flower on long stems and are used for flower arranging. These are called "**cut mums.**" Pot mums and cut mums are typically grown in greenhouses. Pot mums and cut mums are not hardy enough to survive winters outdoors in parts of the country with cold winters.

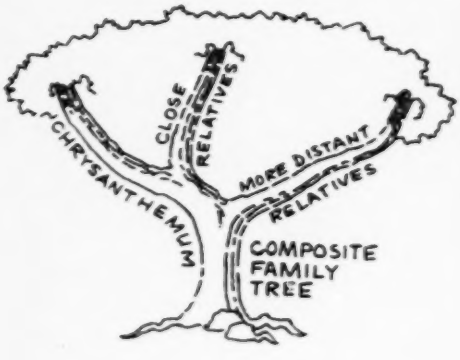
Flower Diagram



Mum Relatives

The mum is in the Compositae Family (also spelled Composite) or Daisy Family because of the arrangement of its flowers. The flower head is a composite of many individual flowers (florets) tightly packed together. A newer name for this family is the Asteraceae Family, however you will still most likely encounter the name Compositae Family in books used in the classroom. Close relatives in the same family include the ox-eye daisy, Shasta daisy, feverfew, and tansy. Their flowers look very similar to the mum. More distant relatives in the same Composite Family include the yarrow, aster, bachelor's button (cornflower), coreopsis, calendula, cosmos, dahlia, English daisy, thistle, strawflower, sunflower, black-eyed Susan, purple coneflower, marigold, and zinnia, plus many wild weeds such as dandelion, goldenrod, and fleabane. The accompanying diagram depicts the relationship between these flowers.

Classification Diagram
(The Family Tree)



Mum Life Cycle

Garden mums are put in the general category of **perennials**. A perennial plant completes its life cycle each year over a period of many years. Within each year, the plant dies back to the roots in the fall, the roots survive the winter, new shoots form in the spring, buds are formed and flowering occurs, then the top dies back again. The accompanying diagram illustrates this life cycle. A more accurate term for garden mums is **tender perennials**, meaning they are prone to freezing and drying in the winter if not properly protected. They are not as hardy as some other perenniels. Information on the next page explains how to properly plant and protect garden mums to help them survive and return each year as a perennial to provide beautiful, blooming enjoyment.

Plant Life Cycle
(Mum Seasons Circle)

BASIC MUM INFORMATION FOR THE TEACHER

Using the Classroom Chrysanthemum Cuttings Kit

MUM MEMO

Order a *Classroom Chrysanthemum Cuttings Kit* from YODER BROTHERS, INC. by January 15. See instructions on Page 3, Mum Memo #1.

Planting New Cuttings For Classroom Use

Cuttings should be planted within 48 hours of arrival in the classroom. The following schedule outlines planting, pinching, and flowering dates for the spring:

Plant Rooted Cuttings: March 1 to 15.
Pinch: Approximately two weeks after planting.
Flower: Approximately seven to nine weeks after planting.

✿ Prepare the growing mix. Use a commercial bagged soilless mix. Or, mix your own. (This can incorporate math.) Prepare your own mix using two parts peat moss, two parts vermiculite, and one part perlite. Have children moisten the mix by sprinkling it with water and mixing it around with their hands.

✿ Fill pots three-fourths full.

✿ Using a finger or pencil, poke a hole big enough to hold a cutting in the center of each pot.

✿ Carefully place a cutting into each hole. Make sure the leaves stay above the surface of the soil. Gently push the mix around the cutting and gently pat it down around the stem. (NOTE: Each child should plant a cutting and be in charge of that cutting. Plant extra cuttings to use in plant investigations throughout the book.)

✿ **Carefully** sprinkle room-temperature water on the mix around the cuttings. Let water run out the bottom of the pots.

✿ Label a Popsicle stick for each child: child's name, date, MUM PLANT. For extra plants, include a stick with the date and MUM PLANT. Have children draw pictures of their mum cuttings for their Mum Books. Record mum planting day on the class calender.

✿ Place the plants in a tray and put them in a bright location, preferably one that receives natural light. If a window faces south, keep cuttings a few feet away from the window out of direct hot sun during the first two weeks. Have children take turns recording the daily weather.

✿ Check the ***Magnificent Mum*** cuttings daily. Have children poke their fingers in the soil every couple days to do a ***Mum Moisture Check***. When the top half-inch feels dry, gently sprinkle room-temperature water on the soil until it just starts to run out the bottom.

Planting Outdoors

These pointers apply to rooted garden mum cuttings that have been flowered in the classroom in the spring or to flowering garden mum plants that have been purchased or donated to the class in the spring.

✿ Plants that have been started indoors need to be "hardened off" or gradually prepared for the outdoors. Start in May by putting them outdoors in a partly shady spot for a few hours each day. After a week, put them in a sunny spot. Keep them outdoors for a few nights overnight. Then, they are ready to plant.

✿ Plant young plants or larger blooming plants 18 to 25 inches apart in a ***sunny*** location (six hours or more of strong, direct sunlight).

✿ Plant in ***fertile, well-drained*** soil. A good soil mixture is made up of a series of "crumbs" or particle sizes. See Lesson 7 (Page 14) for more details. If the soil feels hard and is not crumbly in the hand, add compost, peat moss, or other organic matter. Spread about 2 inches of loosened soil on top and mix it in with a shovel.

a. *Loamy soil if all three layers of sand, silt, and clay are fairly equal.*
b. *Clay soil if the top layer —clay—is the deepest.*
c. *Sandy soil if the bottom layer —sand—is the deepset.*

✿ For gardening in containers, it is best to avoid using soil from the yard because it is heavy and doesn't drain as well in containers. It's easiest to use a commercially prepared soilless potting mix from the garden store.

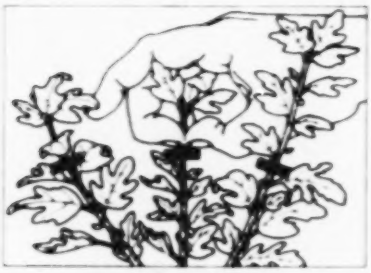
✿ Cut back stems halfway after you have enjoyed the flowers in the spring.

BASIC MUM INFORMATION FOR THE TEACHER

General Garden Practices

Pinching

To encourage branching and development of compact bushy plants, it is very important to pinch back your garden mums in the spring as soon as the new growth is 4- to 6-inches tall. Use your thumbnail and index finger to remove or "pinch" about one-half of the new growth at the top of each and every shoot. Repeat this procedure through the summer whenever new shoots are 3- to 5-inches long. In northern states, stop pinching around July 10 to 15. In southern states, stop pinching around July 20 to August 1. (See accompanying illustration on pinching.)



■ Indicates area for pinching

Watering

✿ Always thoroughly water freshly planted garden mums. Check them for wilting every day for seven to 10 days.

✿ Rainfall in many areas is sufficient to keep your garden mums growing well. During dry spells, water as needed to keep plants from wilting.

✿ The soil in containers will dry out faster than soil in the ground. During especially hot or dry spells, containers may need to be watered every day. Check the soil and the status of the plants every morning.

✿ Water plants in the morning so they have moisture to get them through the day. Avoid watering in the heat of the day.

✿ Putting a layer of mulch on the surface of the soil around the plants will help minimize water loss and reduce watering frequency.

Fertilizer

✿ During the growing season and for garden mums planted in the spring, incorporate into the soil a general purpose dry fertilizer such as 5-10-5 at the rate of a half pound per 100 square feet (another good ***Mum Math Challenge***). Repeat ***monthly*** until August. Liquid fertilizer, such as Miracle Gro, is preferred by many people and may be used instead. Mix and apply according to package directions.

✿ Do ***not*** over fertilize.

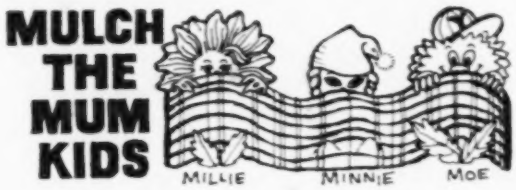
Special Note: Flowering garden mums planted outdoors in the fall do not need any fertilizer until they begin to grow the following spring.

Winter Protection

✿ Keep your garden mums' soil moist as winter approaches.

✿ There is no need to prune plants until the following spring.

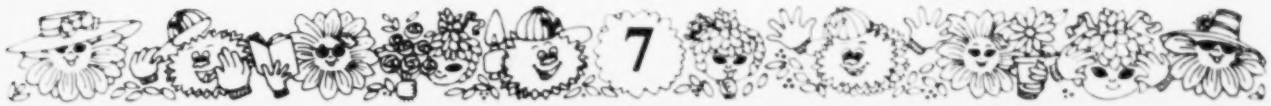
✿ Mulch the plants after several hard frosts with straw or evergreen branches, etc.



Spring Preparation

✿ In the spring, remove any old garden mum stems and gradually remove the mulch which is covering the plants (a rake works fine).

✿ Garden mums should be divided every couple of years. The best time to dig up the mums is after they have been cut back and new growth begins to develop. Discard the old center portion of the root mass. Separate young offshoots and plant each 18 to 25 inches apart. Water thoroughly, then apply general purpose fertilizer as indicated above.



LESSON 1: GET TO KNOW A MUM

Structure, Function, Size

I. Mums-Under-The-Microscope

Skills: *Observe, Compare*

Materials: *FOR THE CLASS: Mum plant, slides, microscope (a magnifying glass is fine). FOR EACH CHILD: Paper grocery bags, yarn, crayons, two 8 ½- by 11-inch sheets of cardboard, one 4-inch cardboard circle, glue, tape, safety pin or jewelry pin, REPRODUCIBLES: Flower Forms Page, Mum Kids Page*

MUM MEMO

It is preferable to use a garden mum plant for this activity, but a pot mum can be used instead.

Procedure:

1. Introduce children to a chrysanthemum. Chrysanthemums are also known as "mums" for short and in these exercises they are fondly known as ***Magnificent Mums***. Gently pull the plant (or a small portion of it) out of the pot. Have volunteers point out the various plant parts.

2. Put the children into cooperative groups of four or five each. Challenge them to brainstorm and develop a list of 20 questions that will help them get to know the mum better through observation. As a class, work together to answer the questions. Have volunteers inspect the plant and help determine the answers. Next, develop a list of 20 ***Mum Descriptive Words*** to use in art and language arts activities.

3. Ask the children how they can get an even closer look at the mum plant (with a microscope or magnifying glass). What will they look for? Help children prepare slides of sections taken from different plant parts. Have them view these slides under a microscope and draw what they see on a page entitled ***"Mums-Under-The-Microscope."*** Include this page in the ***Mum Books*** made in the following step.

4. Finish with the following fun activities:

a. Introduce children to the ***Mum Kids***. Explain that each Mum Kid looks a little different just like each of us look a little different. Explain that the Mum Kids will help show the children that mums, and all flowering plants, can be interesting and fun. Have each child write a letter to a favorite Mum Kid. In the letter, the children should include some things they would like to learn about mums in the weeks ahead.

b. Have the children make the following ***Mum Items*** to use during the ***Mum Activities*** in this book: ***Mum Bags, Mum Books,*** and ***Mum Badges***.

✿ Make the ***Mum Bags*** by having children decorate brown shopping bags with Mum Kids cutouts and attaching yarn handles. Use the Mum Bags to collect items during the ***Mum Explorer*** activities and to take home ***Mum Projects***.

✿ Make the ***Mum Books*** by using sheets of cardboard for the "covers." Have children decorate the front and the back and hand letter the title "MY MUM BOOK" plus their name. Punch three holes down the left margin and connect with yarn. Add ***Mum Worksheets, Mum Journal Pages***, and artwork as completed.

✿ For ***Mum Badges***, reproduce the ***Mum Flower Forms*** page. Have each child pick a flower to use as a badge. Have the children color their flowers and write their names in the center. Glue to a cardboard backing. Tape a safety pin or glue a jewelry pin to the back. Wear Mum Badges during ***Mum Explorer***, ***Mum Planting***, and ***Mum Celebration*** activities.

Extension:

✿ Math: Try these ***Mum Math*** ideas: a) Count the number of flower heads on the class mum plant; b) Count the number of florets (both disk and ray florets) on an individual flower head; c) Reproduce the ***Mum Math Page***. Fill in with problems to practice ***Mum Addition***, ***Mum Subtraction***, ***Mum Multiplication***, or ***Mum Division***; d) Make multiple copies of the ***Flower Forms Page***. Then color, cut out, and laminate the flowers to use as manipulatives. Label decorated cans or margarine tubs with answers to number facts. Program the ***Mum Manipulatives*** with corresponding number problems. Children must put problems into the correct answer tubs or answer cans.

LESSON 2: GET TO KNOW THE FAMILY

Identification, Comparison, Classification

I. The Mum Kids Family Tree

Skills: *Observe, Sort, Classify*

Materials: *Mum plant or related flowers — photos or actual flowers if available, (See list of relatives on Page 5.), identification guides*

Procedure:

1. Explain that plant scientists use the characteristics of leaves and flowers to sort and classify plants. That is how they find out which plants are related to each other. The study of plant parts and plant life is called ***botany***. The study of plant identification and classification is called ***taxonomy***. Challenge students to become beginning taxonomists. Put children into small groups and give each group a set of flowers. Have them sort the flowers into groups based on common characteristics.

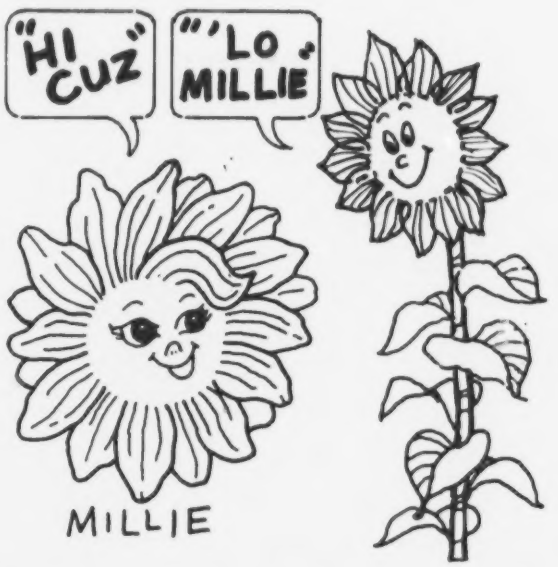
2. Have each group explain its sorting and classification system. Did they find any relatives of the mums? How can they tell? Explain that mums are in the Composite Family. It is so named because what looks like a flower is actually a composite or mass of many flowers tightly packed into a flower head. The Composite Family is actually the largest family of flowering plants.

3. Use a simple picture identification guide, such as ***The Golden Guide To Flowers***, to explain one way of identifying flowers. Can you find the chrysanthemum? Depending on the book, you may see that each flower has two names, the common name and the botanical name. Tell children that the chrysanthemum you are studying is known botanically as ***Dendranthema grandiflora*** (the older classification is ***Chrysanthemum x morifolium***). The common name is "mum."

4. Review the plant classification terms and family tree diagram on Page 5. Perhaps you will find other flowers that used to be classified in the genus Chrysanthemum. Do they look similar to the mum? (They should look quite similar.) How about flowers from other genera in the Composite Family? Do all flowers in the Composite Family look like daisies, like the Millie Mum Kid? (No, some are more like a cushion, such as the dandelion, and mums like Moe Mum Kid and Minnie Mum Kid.)

5. Can you find other relatives in the Mum Kids' family tree (members of the Composite Family) on nature walks or in garden catalogs or magazines?

6. Have the children draw and label a mum flower and the flower of one relative on a page entitled ***"The Composite Family: Mum And A Relative."*** Add this page to their Mum Books.



Extension:

✿ <u>Science/Art:</u> Make a ***Mum Family Tree Mural***. Cover a bulletin board with brown paper. At the top, write "The Composite Family: The Magnificent Mum and Relatives." Cut out pictures of mums and their relatives from old magazines and garden catalogs. Glue pictures on construction paper and write the flower name underneath each picture. Mount the "family portraits" on the board to make a mural. (Refer to Page 5 for a diagram of The Family Tree.)

✿ <u>Science:</u> Make a ***Mum I.Q. Game.*** Write ***Mum Questions*** on the front of 3- by 5-inch index cards and corresponding answers on the back. Put the ***Mum I.Q. Game*** in the Plant Learning Center. Have children play the game in pairs, taking turns to ask each other ***Mum Questions***. One point is awarded for each correct answer. The player with the most points when all the questions are answered is the winner.

LESSON 3: MAGNIFICENT MUM FLOWERS

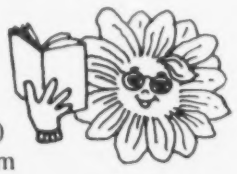
Diversity and Development

I. So Many Mums!

Skills: *Observe, Sort, Classify*

Materials: *Mum flowers, (See Mum Memo #2 on Page 3 for tips.), magnifying glasses REPRODUCIBLES: Flower Forms Page, Mum Kids Page, TEACHER RESOURCE KIT: Mum Color Poster, Mum Variety List, Mum Reading List, Mum History and Stories, Care Tag*

Procedure:



1. Review the structure of a Composite flower by using a daisy (like the Millie Mum Kid) as an example. (Use the diagram on Page 5 as a reference.) Tell the children that they can think of a ***mum*** as being ***many, many*** individual flowers packed together into a head to resemble a single large flower. Explain that a daisy is actually "two kinds of flowers in one." These individual small flowers are called ***florets***. The outer florets (what we often call petals) are ***ray florets*** and the florets in the center are actually called ***disk florets***.

2. For a hands-on experience, have the children look at a daisy mum under a magnifying glass. Make a cross section by cutting it in half down through the center and have the children look at it again. Pull off some petals (ray florets) so children can look at them individually. Have children draw and label a daisy for their ***Mum Books***.

3. Explain that there are other kinds of mum flower forms in addition to the daisy. These forms have different numbers, sizes, and arrangements of the individual florets. All have both ray and disk florets. Sometimes the disk florets are not very prominent. Show the children pictures of different flower forms (from the *Flower Forms Page* and from garden catalogs). Ask them to figure out why each type has its particular name. Tell the story of the ***pompon—a mum in a hat***. (See Mum History and Stories.) What kind of flower forms are the Mum Kids? (Minnie-button, Millie-daisy, Moe-decorative)

4. Reproduce the ***Flower Forms Page***. Have children color and label the page for their ***Mum Books***. Show them actual photos from the ***Mum Color Poster***.

5. Talk about mum flower colors. Explain that the chrysanthemum gets its name from the Greek word "khrusanthemon," which means "golden flower." Each of the flower forms comes in yellow (golden). There are lots of other colors, too, almost every color but blue. Can you find some of these colors in garden books or catalogs?

6. Explain that there are hundreds of different mums in different combinations of flower forms and color. Each different one is called a ***variety*** of mum. To make it less confusing, each variety is given a name. Give children the chance to review the variety list from the Teacher's Resource Kit. Is there a variety with the same name as someone in the class? Show the children a ***Care Tag*** from the Teacher's Resource Kit and point out where the variety name appears.

Extension:

✿ **Social Studies:** Have a lesson on ***Multicultural Mums***. Give each child a copy of the ***Mum Kids Page***. Talk about how the flower forms differ and how they are the same and relate this to people. How many different cultures are represented in your class? Have children color the Mum Kids Page. Mount them on large sheets of cardboard and hang them in the hallway (if permitted).

II. Follow-A-Bud

Skills: *Observe, Communicate, Infer*

Materials: *Mum plant or stems of cut mums, labels*

Procedure:

1. Locate flowers in different stages of development on the mum plant. How does a tight bud differ from a fully open flower? Label one flower in each different stage of development with the date and stage ("bud ,""half open," "fully open"). Have children predict how the flowers will look in one week, in two weeks.

2. Have children observe the labeled flowers weekly for a month and record observations in their ***Mum Books***.

3. What do the children conclude about mum flower development?

LESSON 4: THE LIFE AND TIMES OF THE MUM

The Life Cycle Story

I. Mums And The Seasons

Skills: *Observe, Communicate, Organize*

Materials: *Camera, art supplies*

MUM MEMO

The teacher should review the Mum Life Cycle on Page 5 before doing this activity.

Procedure:

1. At least once during each season, talk to the children about how nature is growing and changing around them all the time. Use ***Mum Observation and Discussion*** as the starting point for a discussion about "the bigger picture." Look at mums and other plants in the Class Plant Collection. Are there some plants that are very young (cuttings or sprouts)? Do the children remember what the mums looked like a month ago? How do they look different now?

2. Turn into ***Mum Explorers***. Put on ***Mum Badges***, get ***Mum Bags***, and take a ***Mum Explorer Walk*** outdoors to look for different life stages of plants. Point out plants that are sprouting, flowering, or dying. What stage are the garden mums in right now? How do the trees look? Look for dandelions (mum relatives, also in the Composite Family). Can you find some dandelions in the bud, flower, or seed stage? If an outdoor walk is not possible, observe the world from your windows. Explain that growing and changing is a part of nature. Sometimes plants die because they aren't healthy. Other plants are turning brown and producing seeds so that more new plants can grow. Many plants, like mums and trees, will turn brown in the fall and then take a rest in the winter so that they can bloom healthy and strong again the following year.

3. Draw a circle on the blackboard, and write the word "circle" underneath. What is a circle? Write the word "cycle." What is a cycle? Note how similar the two words are. The word "cycle" actually comes from an old word meaning "circle." Cycles are repeating circles. What examples of cycles did you observe outdoors? To emphasize the concept, make a ***Mum Seasons Circle***. On a bulletin board make a circle shape. Label the seasons in order around it. Start by mounting a picture or photo illustrating the weather for each season.

✿ As the year progresses, an entire ***Mum Seasons Circle*** can be completed as follows. Take a photo of a garden mum plant at each season of the year. Also take a photo that illustrates typical weather during each season. Mount the photos around the Mum Seasons Circle in order. Label them ***SPRING, SUMMER, FALL,*** and ***WINTER.*** This can also be turned into a ***Mum And Me Display.*** Have children bring in photos or draw pictures of themselves in the different seasons. Display the children's pictures with the seasonal mum pictures. Discuss how knowing the season cycle can help you plan an outdoor planting schedule and a garden.

4. Try these other activities to emphasize the life cycle concept during the year:

✿ Create a ***Chrysanthemum Collector's Corner.*** (This may be done near the Classroom Plant Collection.) Cover a display board with fabric or paper in a season-appropriate color. Label the board for the appropriate season. Discuss the season with the children. How has the weather changed from last season? What changes are taking place with the outdoor plants? How have the garden mums planted outdoors around the school or in neighborhood gardens changed? Have the children name some other objects they would expect to find outside during the present season. Turn into ***Mum Explorers***, put on ***Mum Badges***, gather ***Mum Bags***, and go outside for a ***Mum Explorer Walk***. Observe the garden mums planted outdoors. Carefully cut off a couple of stems to bring indoors. Put children into groups and have each group collect two objects that are characteristic of the current season. Indoors, put items in the Chrysanthemum Collector's Corner. Place the mum stems in a vase of water to observe for several days (even stems in the winter). Seasonal photos or drawings may also be displayed.

✿ Have children create a chapter in their ***Mum Books*** entitled ***"The Life And Times Of The Mum."*** On the first page, have them draw a ***Mum Seasons Circle***. Then each season have them write a few paragraphs about how a garden mum and other plants are growing and changing.

LESSON 5: MUM THREE P'S
Planting, Pinching, Propagating

I. Plant-A-Mum-Project

Skills: *Observe, Communicate, Compare, Infer, Analyze*

Materials: *Classroom Chrysanthemum Cuttings Kit, 50 small flower pots or similar containers such as yogurt cups with drainage holes poked in the bottom, drip saucers or trays, potting mix, water, 50 Popsicle sticks, marking pens, REPRODUCIBLE: Mum Journal Page*

MUM MEMO

This unit should be done in the spring based on desired flowering time. Review the schedule on Page 6 before starting. Be sure to order a *Classroom Chrysanthemum Cuttings Kit*, with 50 cuttings, from *YODER BROTHERS, INC.*, by January 15. See Page 3 for details.

Procedure:

1. Explain ***vegetative propagation*** to the children as defined on Page 4.

2. Hold up a mum cutting and tell the children that it is a ***stem cutting*** which was cut from one plant in order to make another plant. It is an example of vegetative propagation. Another older name for a stem cutting is a "slip." Discuss the cutting. Have children point out the leaves, the stems, and the roots.

3. Follow the directions for planting the cuttings as given in Basic Mum Information For The Teacher on Page 6.

4. Allow mum cuttings to get established for two weeks. After two weeks, have children pull very gently to see if their cuttings have established new roots. When they feel resistance, new roots have begun to grow. Signs of new top growth will also indicate new root growth.

5. When roots are established, cuttings can be moved to a brighter spot if necessary (particularly if stems are starting to look thin and leggy). Some cuttings may be removed and used for ***Plant Investigations.*** (See Pages 13 to 16.) The remaining cuttings can be grown according to the schedule on Page 6.

6. Children should continue to observe their mum plant daily and water every few days. Turn plants one quarter turn daily to prevent crooked plants as they grow toward the light. Once a week, have children draw a picture and record the height on a ***Mum Journal Page*** in their ***Mum Books***. Talk about how the mums are becoming more and more magnificent. As a class, plan what you will do with the ***Magnificent Mums***. Send them home for outdoor planting? Have a plant sale? (See Page 21.) Plant the mums to beautify the school or the community? (See Page 22.)

II. Pinching Practice

Procedure:

Indicates area for pinching

1. Start by referring to Page 7 for pinching pointers. Explain that pinching mums from time to time helps them become bushy and full instead of tall and straggly. It doesn't hurt the plant — it helps it! This should only be done on scheduled days, however, according to planting directions or else the plants will be too short.

2. Ask the children if they can guess what "pinching" is. (Plant pinching is not the same as people pinching!) Using carrot tops or a similar material, demonstrate how pinching is done. For mums, only one-half of the new growth should be removed at a time. Give each child a section of carrot tops to practice pinching. Other suitable materials for pinching practice include long grasses or cuttings taken from forsythia or another soft leafy shrub in the spring after flowering. Clay, play dough, or paper can also be used.

3. Put this new pinching talent to use on mum cuttings when the growing schedule requires that the new plants be pinched. Write ***Mum Pinching Day*** on the class calendar.

Extension:

✿ **Art:** Allow children to take photos of each other with their new ***Magnificent Mums***. Create a ***Mum Project Class Collage.***

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LESSON 6: LET'S INVESTIGATE
Light and Temperature

I. Mum Explorers

Skills: *Observe, Communicate, Compare, Infer, Analyze*

Materials: *Mum Explorer Materials, thermometers, gardening books*

Procedure:

1. Review what mums and other plants need to grow. Write the list on the board, **"WHAT MUMS NEED TO GROW,"** (light, warmth, soil, nutrients, water, air) and keep it posted throughout the ***Mum Investigations***. Explain to the children that in order for the Mum Kids to grow especially big and magnificent they need more than just any amount of light and temperature. Specifically, they should be in a spot that is ***sunny and warm***. Explain the definitions of "sunny" and "shady" on Page 4.

2. Challenge the children to become ***Mum Explorers*** and investigate the light and temperatures in different spots so they can figure what is best for the Mum Kids. Put on ***Mum Badges***, get ***Mum Bags***, and take a ***Mum Explorer Walk*** outdoors to look for spots that are sunny and shady. Go back to these spots at different times of the day to see if they are still sunny and shady. Find a spot that is shady all day and one that is sunny most of the day. Stand in these spots. Does one spot feel cooler than another? Leave a thermometer in each spot for an hour. Which spot is warmer? Are there different kinds of plants in each spot? Does one spot have a greater number of colorful flowers and leaves than the other spot? Do plants of the same species grow more sparsely in one spot compared to another?

3. Using a gardening book, find pictures of plants that generally grow in shady spots and in sunny spots. Did you find a picture of mums? Have the children find some sunny and shady spots to explore in their yards and neighborhoods, then encourage them to share their observations with the class.

II. Plant Investigations: Amount of Light

Skills: *Observe, Communicate, Compare, Infer, Analyze*

Materials: *Two pairs of young mum plants (plants from Classroom Chrysanthemum Cuttings Kit that have established new roots - see Page 12), sunny spot and shady spot indoors, REPRODUCIBLE: Mum Journal Page*

Procedure:

1. Find a ***sunny windowsill*** (one that is sunny most of the day) and a ***shady spot*** (one that is shady most of the day). Have children make a ***Mum Prediction:*** Does the amount of light a mum gets affect its growth? Label the plants in one Plant Pair **"SUNNY - MORE LIGHT"** and plants in the other Plant Pair **"SHADY - LESS LIGHT."** Measure their height and put them in the appropriate spots. Follow the same watering schedule for all plants.

2. Once a week, make some ***Mum Observations***. Record these on ***Mum Journal Pages***. Measure the height of each plant.

3. After one month, bring the plants together in the classroom to discuss the ***Mum Results***. Which Plant Pair grew the most? Which Plant Pair has the most new leaves? The deepest green color? **(NOTE:** Plants in the shady spot may appear to have grown more in height but actually were stretching toward the light source. Thus, compare the nature of the growth itself. Plants in the shade will likely have a more spindly, pale appearance.) What does this tell us about sun-loving flowering plants grown in a sunny spot compared to a shady spot? Pose this ***Mum Kids Challenge Question*** to the children: How do they think a Mum Kid would like to grow in a bright, sunny spot in the garden compared to a shady spot under a tree that doesn't get much light? Remind children that the actual recommendation for mums is to plant them in a location that receives at least half a day of sun (six hours or more of strong, direct sunlight is best).

Extension:

✿ **Science:** Visit a garden center. Look for the ***Sunny Plants Section*** and the ***Shady Plants Section***. Is there a "Partly Sunny" or "Partly Shady" section? Are the mums with the Sunny Plants? What other plants are with the mums? What plants are in the Shady Plants section? Compare and contrast plants in the sunny section and the shady section.

✿ **Art/Science:** Have children draw a picture of a blooming mum in a sunny spot and a shady spot. Add these pages to the ***Mum Books***.

LESSON 7: LET'S INVESTIGATE

Soil and Soil Helpers

I. Mum Explorers

Skills: *Observe, Communicate, Compare, Infer, Analyze*

Materials: *Mum Explorer Materials, shovel, one gallon plastic bags, quart containers (one for each soil sample), identical flower pots (one for each soil sample), butcher paper, toothpicks, magnifying glasses, marking pens*

Procedure:

1. Refer to the **"WHAT MUMS NEED TO GROW"** list on Page 13 and point out soil. Have the children ever really thought that much about working with "dirt?" Isn't it just "there?" Remind the children that "soil" is actually a more accurate term than "dirt." Soil is the top layer of the earth's surface used to support plant life, animals, humans, and the structures we build. Dirt is not a real soil term. "Dirty" may be used to describe your hands once you've worked with soil. Explain to the children that in order for the Mum Kids to grow especially big and magnificent, they need more than just any kind of soil.

2. Challenge the children to become ***Mum Explorers*** and do some soil investigations so they can figure out what is best for the Mum Kids. Put on ***Mum Badges***, get ***Mum Bags***, and take a ***Mum Explorer Walk*** to look at soil in different locations: in a garden, under a tree, on the playground, next to a sidewalk or parking lot, near a rocky spot or outcropping. Explore the soils.

3. Collect soil samples from each spot to take back to the classroom. Get a couple shovelfuls of each. Put each sample in a plastic bag and mark with location. Plan to do the following ***Soil Investigations*** right away.

4. In the classroom, fill a pot with a portion of each soil sample and label each pot. Save these samples to do ***Water Investigations*** (See Lesson 8 on Page 15). Explain to the children that understanding and classifying the remaining portions of samples collected from outdoors will give an idea of how hard or easy they will be to work with for planting and gardening purposes.

Investigate remaining portions of samples collected in the previous step. Try these activities:

✿ Spread a portion of each sample out on white paper. Use toothpicks to sort each sample into piles of different particle sizes. Which sample has the biggest assortment of particle sizes? Which one has the most bits of bark, leaves, and other organic matter? Do you see worms?

✿ Make soil shakes. For each soil sample, fill a one-quart jar halfway with soil. Add water until the jar is almost full, cover tightly, and shake carefully. Let the jars stand for 24 hours, observe them and compare the results with the diagrams on Page 6. Can you classify your soil samples? Emphasize that all soils are mixtures of particle sizes of sand, silt, and clay. The proportion of these components varies with each soil and determines the type of soil you have. It is ideal to have a series of crumb sizes so that the soil mix holds water but also drains for aeration.

5. Discuss your findings. What do these activities reveal about the suitability of the soil samples for planting? Pose this ***Mum Kids Challenge Question*** to the class: Which soil do the children think the Mum Kids would like best in order to grow big and magnificent? Have the children draw and describe a good mum soil. Put the page in their ***Mum Books***.

Extension:

✿ **Science:** Do a ***Science With Soil Helpers Activity***. Gather an assortment of soil helpers together, such as bark chips, compost, commercial fertilizer, mulch, peat moss, perlite, and worms. Arrange products on a table and as a class investigate and discuss them. Explain to the children that sometimes things need to be added to the soil to make it healthier and to help plants grow even better. Sometimes the soil is too dense and hard so that water, air, and roots can't move through. It needs to be made more crumbly (compost, peat moss, and worms help). Sometimes the soil needs to be protected to keep it warm (in cold weather), or cool (in hot weather), and free of weeds (mulch helps). And sometimes the soil needs to be fed so there are more nutrients available for the plants (compost and fertilizer help). Can the children figure out on their own what the different soil helpers do? Have children pick one soil helper and illustrate how they would use it to help the soil in their garden. Add the page to their ***Mum Books***.

LESSON 8: LET'S INVESTIGATE

Water

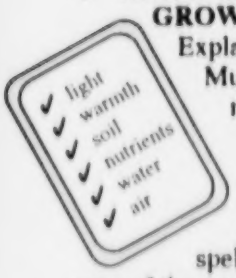
I. Water Investigations

Skills: *Observe, Communicate, Compare, Infer, Analyze*

Materials: *Soil samples from Soil Investigations Activity (Page 14), butcher paper, watering can, water, identical flower pots (one for each soil sample)*

Procedure:

1. Refer to the **"WHAT MUMS NEED TO GROW"** list on Page 13 and point out water. Explain to the children that in order for the Mum Kids to grow especially big and magnificent they need plenty of water. While nature can provide water through rainfall, there are times when we need to help and add more, such as at planting time and during dry spells. Explain that sometimes plants in one area of the yard need to be watered more often than plants in another area. Do the children know why? Tell them to think about puddles. Sometimes puddles stay around in one spot longer than they do in another spot. Sometimes one area of the yard stays wet and mushy longer than another. This has something to do with the soil. You are going to do some investigations to try to figure it out.



2. Try some Water and Soil Tests. First, ask children what they think is meant by the terms "dry," "moist," and "wet." Put samples into metal or plastic containers to find out. First, allow samples to dry out. (Soil that is dry crumbles when it is squeezed.) Sprinkle samples with water to make them moist. (Soil that is moist or "just right" sticks together but doesn't ooze.) Add more water so samples are quite wet and feel them. (Soil that is too wet oozes.) Develop a class list of descriptive soil terms.

3. Check drainage ability. Put the soil samples into identical flower pots. Add the same amount of water (start with half a quart) to each potted soil sample, one sample at a time. Check how long it takes for water to drip out the bottom. Does it take longer for some soil samples than for others? Does the water sit on top of some samples for awhile? Relate this back to the "puddle situation" in Step 1. Some soils naturally drain faster than others.

II. Plant Investigations

Skills: *Communicate, Compare, Infer, Analyze*

Materials: *Two pairs of young mum plants for each investigation (plants from Classroom Chrysanthemum Cuttings Kit that have established roots, see Page 12), assortment of soils, REPRODUCIBLE: Mum Journal Page*

Procedure:

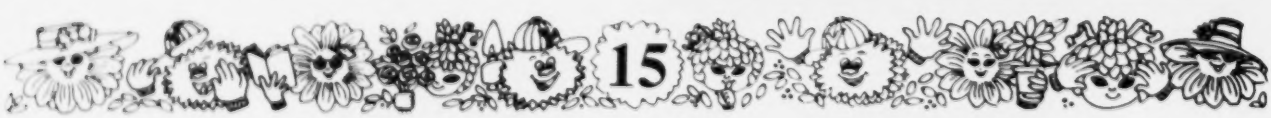
1. Try some ***Plant Pairs Investigations*** to test for the best conditions and practices to grow Magnificent Mum plants. First, brainstorm a set of soil and water conditions to test. All other conditions will be kept the same. Plan to use two pairs of plants for each test (i.e., solution "A" and "B"). Have children develop a ***Mum Prediction*** for each test. Then, do ***Mum Observations*** throughout the test. After one month, compare growth rate and evaluate roots. Develop a ***Mum Conclusion*** for each investigation. Record all of these on ***Mum Journal Pages.*** Suggested investigations include:

- ✿ Growing a plant in dry conditions (allow soil to dry out completely) compared to growing in moist conditions (water when the top half inch feels dry).
- ✿ Using just enough water to moisten the soil at each watering (i.e., one fourth a cup) versus using enough so it drains out the bottom of the pot (i.e., two cups).
- ✿ Using another liquid (i.e., tea or soft drinks) to "water" plants compared to plain water.

2. Discuss your findings. How can this information be used when planning mum plantings for the home, school, and community? Which conditions would be best for the ***Mum Kids*** to grow big and magnificent?

MUM MEMO

Give children the opportunity to practice wise watering techniques by letting them take turns watering plants (as needed) indoors and outdoors. Teach them to soak the soil around plants gently, but thoroughly, rather than just pouring water down on top of them.



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LESSON 9: LET'S INVESTIGATE

Plant Helpers and Plant Harmers

I. Mum Explorers

Skills: *Observe, Communicate*

Materials: *Insect resource material (see suggestions on Resource List in Teacher Resource Kit), magnifying glasses, Mum Explorers Materials*

Procedure:

1. Refer to the **"WHAT MUMS NEED TO GROW"** list on Page 13. Have the children brainstorm to develop a **"WHAT MUMS DO NOT NEED TO GROW"** list of things that can harm them or hinder their growth (disease, insects, animals, careless people, bad weather). Explain that while there are harmful insects, there are also helpful insects. The following can be **plant helpers** because they eat insects: ladybugs, praying mantises, snakes, butterflies, spiders, dragon flies, toads, and some birds. Bees are important because they help fertilize and propagate plants.

Insects that can be **plant harmers** are generally of the munching kind, including: aphids, mites, leafminers, thrips, and some caterpillars. Damage signs include chewed leaves, sticky leaves, and very wilted leaves. Leafminers leave little narrow "mines" or squiggly lines all over the leaves. Look for pictures of helpers and harmers in insect books. Can you find any plant helpers or plant harmers outdoors?

2. Become ***Mum Explorers***. Put on ***Mum Badges***, get ***Mum Bags***, and take a ***Mum Explorer Walk***. Look for signs of "sad" plants and plant damage. Use magnifying glasses to look closely at leaves. Look on the undersides of leaves. Look in leaf "axils" where leaves join the plant. Gently shake plants to see if there are insects flying around. Are there signs of damage? Who can spot a ladybug, a spider, a bird, or other garden helper? Collect samples of any damaged flowers or leaves.

3. Back in the classroom, look at the collected samples. Talk about how you get rid of garden munchers. Remind children that some chemical sprays can harm garden helpers as well as people. People don't need to spray chemicals just because they see an insect. Are there some other ways to get rid of harmful insects? Look in organic gardening books or magazines to find out. Remind children not to step on every insect that they see, since many of them are helpful.

4. Have the children draw a picture of a mum together with a plant helper in their ***Mum Books***. Have them write a poem or short story about the plant helper.

II. Mum Health Check

Skills: *Observe, Communicate, Infer*

Materials: *Mum plant, magnifying glasses, care tag (with Teacher Resource Kit)*

1. Explain to the children that the inspection and observation skills that they have developed as ***Mum Explorers*** are very important. Do they know why? It helps them to be ***Plant Doctors*** when they are obtaining and maintaining plants for the home and the garden. Explain that it is important to start out with healthy plants as well as to keep plants healthy throughout the growing season.

2. Explain that they are going to learn how to give a ***Mum Health Check.*** Think of it as giving the plants a "physical" just like the children would get a physical before starting something strenuous. Have the children brainstorm a list of what they think should be checked during a Mum Health Check (e.g., color of leaves, firmness of leaves, presence or absence of leaf damage, length and strength of stems, roots long and healthy white in color). Explain that the Mum Health Check can be summarized as a 1-2-3 process: Check (1) flowers, then (2) leaves and stems, then (3) take a peek at the roots and soil (the plant from top to bottom). ***Be careful not to damage the plant when you do this!*** Put the Health Check into practice on a classroom plant or plants at a garden center. Encourage children to practice giving plants a ***Health Check together with their parents*** whenever they are visiting a garden center or other plant store.

3. After completion of investigations in this and the previous two units, have children develop a page in their ***Mum Books*** entitled ***"Caring For The Mum Kids."*** They must describe the conditions they have determined as best for growing ***Magnificent Mums*** (specific light, water, temperature, soil, and fertilizer conditions and practices). Also, describe how to give a Mum Health Check to determine the health of the plant. You can even expand on the Caring For The Mum Kids Page. Have children develop posters and/or a bulletin board on the theme. Refer to care tags in the Teachers Resource Kit.

LESSON 10: MUM TERRITORY

Get-To-Know The Garden

I. Mum Explorers

Skills: *Observe, Communicate, Cooperate, Measure*

Materials: *Mum Explorer Materials, yardsticks, field guides, garden reference material, butcher paper, colored pens and pencils*

Procedure:

1. Tell the children that the skills and knowledge they have developed from the previous activities can be put to use in the garden. Remind them that each and every one of them can be a good gardener. They don't even need a lot of space, a little patch of soil will do. Everyone can grow plants to help make the world a healthier, prettier place! These exercises will show them how to use their new skills in order to ***Get-To-Know The Garden***.

2. Help the children brainstorm a list of 25 questions that will help them get-to-know the garden territory. For starters, it helps to determine which way is north, south, east, and west. You should also determine where the sunny and shady spots are. Questions should also range from size and shape of natural and man-made features to the colors, textures, and sizes of surrounding plant material. It helps to learn about climactic and territorial conditions as well. (Is the terrain flat or hilly? What are the average weekly temperatures?)

3. Challenge the children to become ***Mum Explorers*** in order to "learn the territory." Put on ***Mum Badges***, get ***Mum Bags***, and take a ***Mum Explorer Walk***. Familiarize yourselves with the "territory" (school yard or community spot) surrounding the ***Mum Garden*** site. Take walks at various times of the day for two weeks. Try to get answers to the 25 familiarization questions.

4. As a class, make a diagram of the garden territory. Include the features observed in the previous step. To make it easier, the teacher can diagram an overall layout of the area, then different groups of children can color in different features.

✿ **Science Challenge:** Use field guides to identify trees, shrubs, and plants in the garden territory. Include names on the class map.

II. Garden Beginnings

Try these enrichment activities to help make children comfortable with garden materials and practices.

✿ **Find out about frost.** Call the local extension agent to find out the average first (fall) and last (spring) frost dates for your region. Explain that these are average dates. Frost may still form later in the spring or earlier in the fall in a garden that's out in an open field or in a low spot compared to a spot that is protected by trees or a hill.

✿ **Do some garden reading.** Plan ***Garden Reading Sessions*** for the children. Make various gardening books, magazines, and catalogs available. Encourage children to look up mums and their relatives. Get a copy of the ***Old Farmer's Almanac*** for class reference. Look up and read something daily to the class.

✿ **Try some tool I.D.** Assemble a collection of garden tools (and suitable substitutes like old forks and spoons) along with other garden supplies. Have children guess the name and use for each item. Discuss handling and cleaning of tools. Make a ***Garden Supplies Catalog***.

✿ **Learn some garden terms.** Review garden terms presented on Page 4. Look for examples of these terms, such as mulch, in the garden territory. Make ***Garden Vocabulary Cards*** out of 3- by 5-inch index cards. Print the garden term on the front and definition on the back. Laminate the cards. (Another option is for children to look up definitions in the dictionary on their own.)

✿ **Do Plant Health Checks.** Practice ***Plant Health Check*** skills on already established plants on the grounds as well on mums to be planted and plants in the stores.

✿ **Do some Mum Maintenance.** If there are already some mums planted on the grounds from previous years, give children the opportunity to practice plant skills. In the spring, try some ***Mum Maintenance*** such as dividing plants, removing mulch, pruning back old brown growth, or pinching back new growth. In the fall, pinch off "spent" (shrivelled, dying) flowers and yellowing leaves which are unsightly.

LESSON 11: PICKING AND PLANTING THE MUM SPOT

Garden Decisions and Design

I. The Mum Spot

Skills: *Observe, Communicate, Cooperate, Infer, Measure, Analyze*

Materials: *Shovels, planting spot in ground or a container filled with potting mix, organic matter, mum plant(s), watering can or hose, yardsticks, REPRODUCIBLES: The Garden Spot, Mum Math Page*

MUM MEMO

The instructor should review mum planting and care information on Pages 6 and 7 before beginning this unit.

Procedure:

1. Continue to strengthen the skills practiced in the previous lesson. Explain to the children that creating even the smallest garden requires planning and decision making. Remind the children that in order to plan a ***Mum Spot*** where the plants will grow into Magnificent Mums they must keep in mind the needs that were discovered during the ***Plant Investigations***. Review these needs. You must also think about the appearance of the Mum Spot. Will it look pretty one day, one week, one month, one year after planting? (NOTE: This would be a good time for a field trip to a mum garden or garden center to get ideas. Also, consider bringing in a landscaper or garden designer to speak to the class.)

2. ***Pick-A-Spot.*** Take a ***Mum ExplorerWalk*** around the school grounds or other area to be planted to pick a spot. Put the skills into practice that were developed in the previous activities. Look for a prominent spot that could use a splash of color. Gather information to complete ***The Garden Spot Worksheet***. If planting space is at a minimum, consider container gardening. One or more containers can be placed and planted in a sunny spot. They should hold at least 1 to 1-1/2 gallons of soil and should have drainage holes in the bottom. (Use a gallon milk jug to measure.)

3. ***Plan-The-Spot.*** If more than one plant is involved, what colors should be placed together? Will there be groupings of plants or any other pattern? Review photos in books or walk past local gardens for ideas. Fill in the blanks and color ***The Garden Spot Worksheet.***

4. ***Prepare-The-Spot.*** This is a good chance for a group effort. Invite some parents to come and help. Be the ***Mum Team*** on a ***Mum Mission*** to beautify the land! Make sure everyone has a duty in the preparation process. First remove any weeds. Then start digging and loosening up the soil. Dig it about a foot deep, and break up all the hard clumps. Spread about 2 inches of organic matter such as compost on top and mix it in. If planting in a container, fill with a commercial planting mix.

5. ***Plant-The-Spot.*** Make it a fun experience. Have members of the ***Mum Team*** dig a hole for each plant, making the hole slightly larger than the container the plant is currently planted in. Put the plant in the prepared hole and replace the soil. Gently firm it down around the plant (but don't push out all the air) then gently add one or two gallons of water (measure with milk jugs) to the soil around the plants. For the best ***finishing touch***, add a "blanket" of mulch such as straw or bark chips. Indoors, celebrate ***Mum Planting Day*** with a party and mark the day on the class calendar. Have children illustrate Mum Planting Day in their ***Mum Books.***

6. During the first week after planting, do some ***Mum Math*** problems using the ***Mum Math Page***. Visit the mums every day that week and add water each day that it does not rain. After that, set up a ***Mum Care Schedule*** so the mum plants are checked and cared for weekly. Remind your ***Mum Team*** that making ***Magnificent Mums*** takes some effort but can be fun and rewarding. The planting helps the earth and makes it more beautiful. If planted in the spring, decide who will pinch, fertilize and water plants over the summer. Refer to the yellow care and handling sheet in the Teacher Resource Kit for recommended care in the garden.

CREATIVE MUM PROJECTS

Ideas to Integrate Reading, Language Arts, Social Studies, Art, and Even Fitness

Suggestions are given for additional creative projects based on the Mum Theme. Use the ideas to enrich Mum Lessons, enhance room decor, and enliven Mum Festivals or other school and community projects.

✿ ***Magnificent Mum Banners.*** Have the children create mum-theme banners using fabric scraps on old sheets, or crayons and paint on brown paper. Hang banners in the classroom, the library, or throughout the school.

✿ ***Mum Kids Posters.*** Have the children create posters using the Mum Kids characters. Encourage them to create slogans, such as "Mum Kids Save The Earth" or "Have Fun With Mums."

✿ ***Mum Tees.*** Make fun Mum T-Shirts by painting mum designs on the shirts with fabric paint.

✿ ***Mum Family Scrapbook.*** Create a class scrapbook with photos and drawings of the various Mum Activities. Include drawings of the Mum Kids as well as photos of mums and relatives clipped from old magazines and garden catalogs.

✿ ***Mum Writings.*** Encourage the children to create some Mum Writings such as Mum Haiku Poetry, Mum Myths, and Mum Tall Tales. Add Mum Writings to the Mum Books.

✿ ***Mum Advertising.*** Have the children create a print ad for Magnificent Mums to appear in a newspaper or magazine.

✿ ***Mums-In-The-News.*** Assign children to look for mums and other plants pictured and written about in ads, photos, and articles in newspapers and magazines. Give children the chance to present news items to the class. Make a ***Plants-In-The-News Scrapbook***. Consider starting a ***Plant Column*** in the school or local paper. Perhaps it could be a question and answer format.

✿ ***Mum Photos.*** Read ***Linnea In Monet's Garden*** to the class. Invite a garden photographer to speak to the class (check with the local garden club). To practice photography, have children take ***Mum Photos***. (Encourage a range of photos from flower close-ups to still life pictures of mums, pumpkins, and leaves.) Make a class ***Mum Photo Display*** for the whole school to enjoy.

✿ ***Mum Art.*** Mums can be found extensively in Oriental art as well as in Dutch, Flemish, and English paintings. Do some art history research to find examples of ***Mums In Art***. Give the children the chance to create their own Mum Art with water colors or other material. Hang paintings in the hallway for all to enjoy (if permitted).

✿ ***Mum History and Culture.*** Read the summary of Mum History provided in the Teacher Resource Kit. Have the children conduct further research into the prominence of mums in Chinese and Japanese history. Have a ***Japanese Tea Festival*** with mums and teas to celebrate. For something different, invite a professional floral designer to demonstrate and help teach "Ikebana" (Japanese floral design). Another approach to this activity could be ***The Mum Kids Go To Japan.***

✿ ***Mum Music.*** Listen to the music of composers inspired by nature. Encourage children to write a verse to a song about how mums beautify the world.

✿ ***Multicultural Mums.*** Turn a discussion of the Mum Kids and their similarities and differences into a discussion about the similarities and differences among people.

✿ ***Mum Fitness.*** Try some ***Mum Fitness Fun*** during a ***Mum Explorer Walk***. During the walk, try some fun exercises, such as: Touch your toes five times when you see a bird, do 10 jumping jacks when you see a yellow flower, run in place for 10 seconds when you see a puddle, jump up and down five times when you see a mum. ***See, MUMS CAN BE FUN!!!***

MUM ENRICHMENT IDEAS

Theme-Based Field Trips, Speakers, Bulletin Boards

Suggestions are given for enrichment ideas based on the ***Mum Theme.*** Use the ideas to reinforce concepts and enrich ***Mum Lessons***.

Field Trips: Field trips are an excellent way to get a one-stop, hands-on view of an abundance of plants, including mums, as well as garden supplies and even plant-care activities. Many businesses welcome youth groups. Some will even plan special activities, such as take-home planting projects.

✿ Suggested spots for field trips include garden centers, nurseries, arboretums, and botanical gardens.

✿ Special field trips can also be taken to mum plantings in parks and other public places as well as to private gardens near the school. The private garden tour is an especially desirable option in areas where funding for field trips is minimal.

Some Suggested Field Trip Activities for Spring and Fall

✿ Identify mum plants. How many colors can you find? How many flower forms can you find?

✿ Look for mum relatives (other plants in the Composite Family).

✿ Check to see if mums are planted in the ground or in containers. What kind of containers were used? Are the plantings all one color or mixed colors? Is there a pattern to the plantings?

✿ Find out if there is a greenhouse where cuttings are rooted. Can you see if any cuttings are being rooted at that time?

✿ Find out what mum care procedures are followed by the staff.

✿ Have someone demonstrate how to water the mums.

✿ Try to identify the tools in the tool section.

✿ Find these other items: pots and decorative containers, growing mixes, fertilizers. How many different kinds of each do you see? Have the staff explain the differences between different mixes and fertilizers.

✿ Ask for permission to take photos and write a review for the school/district newsletter or the local newspaper.

✿ **SEND THANK-YOU NOTES FROM THE CHILDREN AND THEIR TEACHER!**

Speakers: Plant professionals and hobbyists can help to bring lessons to life by sharing practical tips and fun stories. They can shed much more light on the subject of mums than can be covered in this book.

✿ Suggested speakers include: professional plant growers (greenhouse and field); certified Master Gardeners; garden center and nursery operators; other plant retailers such as florists and supermarket floral directors; landscape professionals; arboreta and botanical garden growers and educators; garden writers; garden photographers; horticulture therapists; professional gardeners for estates, zoos, parks, and communities; garden hobbyists, such as garden club members.

Tips for Working With Speakers

✿ Ask if the intended speaker has ever worked with children in your age group.

✿ Ask if the speaker can bring actual plant material, plant care supplies, and other tools of the trade.

✿ Encourage the speaker to bring slides or a picture portfolio.

✿ Three weeks prior to the presentation, have the children brainstorm a set of questions and send the list to the speaker.

✿ Ask if the speaker has any items he/she would like to give each class member.

✿ Ask if the speaker would mind if you took photos and wrote a review for the school/ district newsletter or local newspaper.

✿ **SEND THANK-YOU NOTES FROM THE CHILDREN AND THE TEACHER!**

Bulletin Boards: Bulletin boards help to reinforce lessons and set a ***Mum Mood*** in the classroom.

✿ Some bulletin board ideas include: The Many Faces Of The Mum (mum forms and colors); Caring For The Mums; The Mum Family Tree; Mum Math; We're In The Mood For Mums; Mad About Mums; Reading With Mums; The Mum Kids Go To Japan (history and culture); The Mum Kids Help The Community (beautification theme); Mum Memories (photo collage of children participating in mum activities in this book).

SCHOOL AND COMMUNITY MUM PROJECTS

Extending mum projects throughout the school and the community can help to teach the children important cooperative working skills and lessons in civic pride. As ***Mum Ambassadors,*** they can help to beautify the land with mums and share an appreciation for plants with their friends and family. For community projects, take the approach ***The Mum Kids Help The Community*** to make projects inspiring and fun for children. Planting projects can be done in the spring with young plants or in the fall with larger plants. Suggested projects include:

✿ **Mum Grow-And-Sell Project.** One option for those mum cuttings that are planted and tended by children but not used for plant investigations is to make them part of a ***Mum Grow-And-Sell Project*** for the spring. Consider doing this along with another class in the same grade. Follow the schedule for spring flowering and grow the plants for a ***May Mum Sale.*** Along the way, children can get lessons in planning, ***Mum Math*** (costs, profits, etc.), and advertising. The ***Plant Sale*** can be held for the public on a Saturday morning, with children working in shifts at different jobs (get parent volunteers to help, too). You might even want to work in cooperation with the local PTA. Have tables for a display, a cashier, and care information handy. Another idea is to have children decoratively paint clay pots to sell. Use acrylic paint for these. (Even if people decide to plant their mums in the ground, they can put another plant in the pretty pot.) Seed packets can also be made available for sale. Fund-raising with seeds and plants can promote environmental stewardship much better than with candy!

✿ **Plant-A-Flagpole.** The base of a flagpole is a good place for a first planting project. This area can be planted in spring with young plants from the Plant-A-Mum project (see Lesson 5) or with small flowering plants purchased or donated from a local garden center. Or, the area can be planted in the fall with mature flowering plants that have been purchased or donated. Work as a ***Mum Team*** on a ***Mum Mission*** to beautify the land. First, plan the design as a cooperative class activity (see Lesson 11). Follow directions on Page 6 for preparing the soil. Be sure to add peat moss, compost, or other organic matter to the soil to help add nutrients and open it up for better aeration. Compost will also add beneficial nutrients. When finished, mulch the soil with bark chips to help minimize water loss and weed growth. Take a photo of the class in front of the newly planted pole.

✿ **Plant-A-Spot.** If the flagpole is already planted or it is attached to a wall, consider planting a different spot. Or, you may just want to plant spots in addition to the flagpole in order to add more color around the school. Be sure the spot is sunny and warm as described on Page 6. Generally, spots under a tree should be avoided since there won't be enough sunlight. Some ***Mum Spots*** to consider at the school include the base of the school sign or marquees, at the entrance to the school driveway, next to the front steps, or at the corner(s) of the building. Similar spots can be considered around buildings in the community, such as a library, general offices, or bank. Why not plan a project to ***Plant-A-Spot*** in the town square!

✿ **Make-A-Mum-Container.** Container gardening can be fun and rewarding. One option is to make your own containers out of wood scraps or boards. Why not work together cooperatively with a shop class at the junior or senior high school? For lots of ideas and helpful tips, check out ***Gardening In Containers*** from Ortho Books, found at many garden centers and bookstores.

✿ **Make-A-Mum-Display.** Create a display for the enjoyment and education of the public at a community place such as the library. Have the children help to plan, create, and maintain the display. The theme can be a general mum topic, such as ***"You Can Grow Mums," "The Magnificent Mum,"*** or ***"Mad About Mums."*** It can also highlight class activities, such as ***"Mum Fun In Room 502"*** or ***"Planting For A Blooming, Beautiful Future."***

✿ **Mums Between The Generations.** Mums and other plants provide a wonderful basis to generate conversations and activities between children and the elderly. Have the children take ***Mum Messages*** out into the community by visiting a local retirement home or nursing facility. Children can share ***Mum Tales***, ***Mum Myths***, and other readings. Follow-up with some small group conversations, with each group sharing a ***Mum Plant Friend*** and plant stories. Then, have the children (and adults if permissible) cooperate in a ***Mum Planting Project***. Be sure to capture the ***Mum Memories*** with photographs and have students send thank you notes after the event.

MUM BEAUTIFICATION PROJECTS

In this day of environmental awareness and concerns, beautification activities are increasing in popularity. They provide a positive experience for everyone. Children get to enjoy the outdoors, practice gardening, and learn skills of working cooperatively. Their civic pride and environmental enthusiasm will flourish as the land turns from bland to blooming. Parents will be pleased that their children are learning practical skills and enjoying the outdoors. And, citizens in the community will be thrilled with the colorful transformation that takes place.

Suggested Mum Beautification Projects

✿ Brighten a bare spot in a new office complex.

✿ Transform a weedy spot in the park.

✿ Clean up and plant a prominent roadside area.

✿ Add a special touch outside a homeless shelter or community hall.

✿ Bring some budding hope to the grounds of a nursing home or veteran's hospital.

✿ On a larger scale, try some special theme-plantings for a grand splash. Try a ***Mum Quilt*** (mums planted in squares of color), a ***Mum Symbol*** (mums planted in a letter shape or an emblem pattern), or even a ***Mum Animal*** (mums planted in an animal shape).

Mum Beautification Project Tips

✿ Use mums that are in flower. Large, full mums available in the fall will have the most immediate impact. (Perhaps the class can work with local corporations to get funding to obtain plants.) In the spring, young flowering plants from the class planting project can be used.

✿ Consider working with other classrooms and community groups (such as garden clubs and environmental organizations). This will provide more helpful hands as well as the experience of working together.

✿ Also consider the experts. Talk to plant professionals at a local nursery or garden center to review planting ideas and recommendations. Perhaps their companies will be interested in donating time and materials as part of a public service.

✿ When planting, place plants at the closer spacing (16 inches apart) so the design will fill in faster and provide a dense mass of color.

✿ Make sure the design is well-planned, diagrammed, and labeled ***before*** planting day so there is less confusion. It also helps to prepare the planting area ***prior to*** the main planting day because the actual planting will probably take longer than estimated.

✿ Keep maintenance in mind. Remember that garden mums require some maintenance such as pinching, pruning, dividing, fertilizing, and mulching. They will also need to be watered during dry spells. Keep in mind that garden mums are tender perennials. With proper care and winter protection, they can potentially rebloom for many years to come. ***Before*** planting, develop a maintenance plan. Consider approaching a local garden club or garden business about the maintenance requirement. Perhaps they would consider it as part of a public service. The teacher should also plan to take the class back to the spot at least one more time (if planted in the spring) or a few more times (if planted in the fall) during the school year. Future classes can be taken to the planting as part of ***Mum Learning Activities.***

✿ Try to get press coverage on ***Mum Planting Day.*** Contact local media (newspaper, radio, television) a few weeks before the event.

✿ Put a sign in the planting area. The sign should include the following information: Mums planted by _____; Material donated by _____; Garden maintained by _____.

✿ ***THANK-YOU NOTES SHOULD BE WRITTEN TO ALL PARTIES BY STUDENTS AND THEIR TEACHER.***

FALL MUM FESTIVAL

Fall is the traditional time for mums. The bright mums, together with the crisp air and signs of the harvest, provide the perfect backdrop for a festival. Plan a festival for a weekday afternoon or a Saturday afternoon in late September or early October so that preparation activities can be done in early September when school begins. Invite the whole community! The ***Fall Mum Festival*** also provides a fun tie-in to classroom mum learning activities in all subject areas. How exciting it is to look forward to the festival while doing ***Mum Math*** and making a ***Mum Family Tree***! Plan a mum-theme activity for each day leading up to the event. Help to get schoolmates ***In The Mood For Mums*** by displaying ***Mum Art*** around the school.

Mum Decorations To Make And Display

✿ Mum plants in fun planters — Make ***Pumpkin Pots*** by scooping out pumpkins and placing mums, pot and all, inside pumpkins for fun temporary containers that can last for a few days.

✿ Mum Mobiles

✿ Mum Banners

✿ Mum Chains — string mum shapes copied from the reproducible Flower Forms Page.

MUM MEMO

Make *Mum Invitations* for families and *Mum Posters* to hang around the community.

Mum Projects To Do And Display

Plant Learning Center
Mum Spot Planning and Planting
Mum Books
Mum Bags or Mum Boxes
Mum Badges
Mum Kids Posters
Mum Kids Family Tree
Mum Paintings
Mum Photos
Mum Mural
Mum Puppets
Mum T-Shirts
Mum Math Papers
Mum Writings (poems, myths, tales)

MUM MEMO

Make *Mum Jewelry* and decorated flower pots to use as fund raisers.

Fall Mum Festival Menu

✿ Mum Cookies — For each cookie, put frosting on a plain sugar cookie, stick candy corn around the outer edge with points facing out, and put sprinkles in the center. Keep covered so frosting doesn't harden. You can try this design on cupcakes too!

✿ Pumpkin Bread or Nut Bread

✿ Apple Slices with peanut butter and raisins

✿ Roasted Seeds (Pumpkin and Sunflower) — Put into small paper cups.

✿ Apple Juice or Apple Cider

Fall Mum Festival Fun Activities

✿ Have a ***Mum Raffle*** — sell tickets to win plants displayed in "Pumpkin Pots."

✿ Have a ***Mum Parade*** — Dress up like the Mum Kids.

✿ Have a ***Mum Walk*** — Walk around the school grounds to see mum plantings.

✿ Put on a ***Mum Puppet Show.***

✿ Play ***Mum Games — Mum Scavenger Hunt*** - look for hidden mums; ***Mum Relay Races*** - runners must balance empty mum pots on their heads with no hands; ***Milk Jug Mums*** - try to toss pennies to land in empty plastic milk jugs that have the tops cut off, decorate milk jugs by gluing on pictures of mums.

✿ Make ***Mum Masks*** — Use paper plates to create Mum Masks. Let students draw the Mum Kids faces on the plates and cut out the eyes. Paste or tape the masks onto large Popsicle or craft sticks which students can use to hold the masks up to their faces.

✿ Have ***Mum Face Painting.***

MUM MEMO

Contact the media (newspaper, radio, television) a few weeks before the event.

MAKE MAY MUM MONTH

While fall is a time to celebrate the colorful harvest, spring is the time to celebrate the rebirth of nature and to show earth our appreciation with new plantings and lots of learning activities. It is a time to have ***Plant Fun*** and to share ***Plant Enthusiasm*** with our friends and family.

In The Classroom

✿ Plan the ***Mum Planting Project*** so mums come into flower in May. Use them for take-home projects, fund raising, or planting projects. (See below.)

✿ ***Mums For Mom.*** Have the children take home Mum Project Plants for their mothers. Have children make "name tags" to go on the mums. As a class, develop a care sheet to send home to Moms. Invite Moms to school for a ***Mums For Moms Celebration***.

✿ Plan out ***Mum Plantings*** for school or community areas.

✿ Decorate everywhere! For starters, try the following ideas.

- **Daisy Chains.** Have children color the daisy shapes from the Flower Forms Page and string on to green yarn. Hang them around the door and around the room.
- **Mum Mobiles.** Suspend mum shapes reproduced and colored from the Flower Forms Page.
- **Mum Watercolor Portraits.** Make portraits of a Mum Kid or of a specific mum variety.

✿ Do ***Mum Reading And Writing.*** Read and write garden stories; write about what it's like to be a mum waking up in the spring.

✿ ***Wear Mum-Wear!*** On May Day, wear Mum T-Shirts and Mum Badges all day. After that, have one day each week be a ***Mum Color Day.*** On that day, everyone must wear an item of clothing in that color (pink, coral, purple, yellow, bronze, red, or white). Or, wear clothing with mum flowers on it.

✿ Bring ***Mum Speakers*** to class. How about a garden writer, a garden photographer, or a landscaper?

✿ Propagate some other plants in the same way as mums (as stem cuttings). Try coleus, English ivy, impatiens, Jade plants, and Swedish ivy.

School Activities

✿ Go on ***Mum Explorer*** or ***Mum Patrol Walks*** every day.

✿ Try some other ***Mum Fitness*** activities. (See Page 19, Creative Mum Projects.)

✿ Make a ***Mum Mural*** for the school entrance.

✿ Have a ***Mum Fund Raiser.*** Sell plants from the Plant-A-Mum Project.

✿ Have a ***Daisy Scavenger Hunt.*** Hide daisy shapes (reproduced from the Flower Forms Page) around the school building or the school grounds. Which child can find the most daisies?

✿ Do ***Mum Chalk Drawings*** on the playground or a sidewalk for others to enjoy. (Check with administration first.)

Community Activities

✿ Take a ***Community Mum Walk*** on May Day.

✿ Pick a spot for a beautification activity. Have a ***Mum Spot Cleanup*** sponsored by the ***Mum Kids.***

✿ Plant some mums from the Plant-A-Mum Project in containers in front of a community building. (Plan the event close to Memorial Day and call it ***Mums For Memorial Day.)***

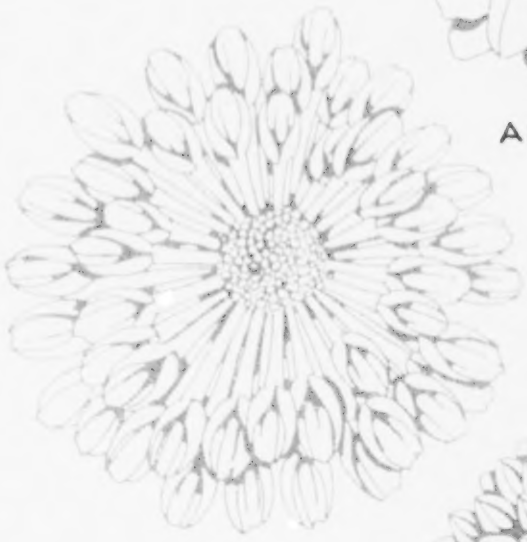
✿ Do ***Mum Chalk Drawings*** on a sidewalk where many people can enjoy them. (Check with the community first.)

✿ Challenge children to ***Do Good Daisy Deeds*** for the community this month. Deeds can range from picking up litter to learning a new community fact. Reward each deed with a ***Daisy Flower*** (made from reproducing the Flower Forms Page). The child with the most ***Daisy Flowers*** at the end of May wins a plant to take home.

✿ Plan a ***Mum Family Walk.*** This can be a Saturday walk through a park or other community area with mum plantings. Look at the mums and other plants with new green shoots. Enjoy the spring weather ***together!***

FLOWER FORMS PAGE

ANEMONE



SPOON TIP

SPIDER

POMPON

DAISY

BUTTON

DECORATIVE

MEET THE MUM KIDS

The Mum kids show us that mums are fun.

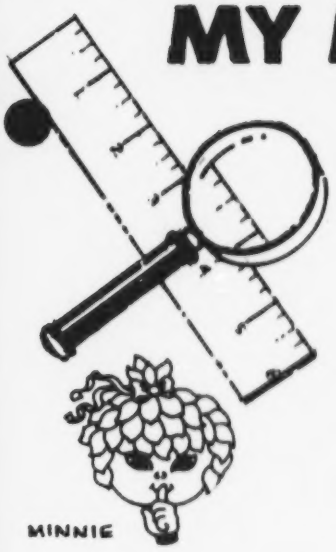
The Mum kids show us that mums have many faces.

The Mum kids show us that mums can help make the world beautiful.

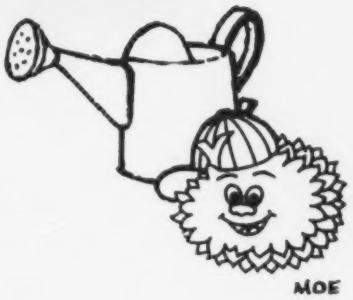
The Mum kids teach us that plants need care.

The Mum kids teach us that we can all grow plants and enjoy plants together.

MY MUM JOURNAL PAGE



Name



MUM MATH

Complete the MUM MATH problems

1.

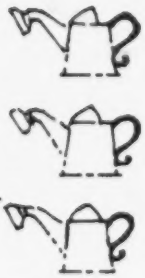
2.

3.

4.

5.

6.

7. 

8.

9.

10.

11.

12.

THE GARDEN SPOT

In the Yard

In a Container

Garden Spot Questions

1. Is the garden spot sunny?_____

2. What shape is the garden spot?_____

3. How big is the garden spot?

   a. If it is a square or rectangle, it is _____ feet wide and _____ feet long.

   b. If it is a circle, it is _____ feet in diameter.

   c. If it is a container, it holds _____ gallons.

4. How many plants will be planted in the garden spot?_____

   BONUS: If plants are placed one foot apart, how many will fit in the garden spot? How many if they are planted two feet apart?

5. If more than one plant is used, will they be planted in a straight line or in a pattern?_____

   If in a pattern, what kind? (such as a half-circle or S-shape)_____

6. What are the flower colors?_____

   _____

7. If there is more than one color, what colors will be grouped together?_____

   _____

   Why?_____

   _____

8. Before planting, draw and color your garden spot above.

   BONUS: On the back of the page, draw what your garden will look like next spring when the plants are just beginning to send up new green shoots.

Worksheet adapted from a project by Erin Loganbill,
fourth grade teacher, Mahaffie Elementary School, Kansas City, Kansas.

This is to certify that

_____

(Name of Student)

has recently completed Magnificent Mum Activities and is hereby named a

MUM TEAM MEMBER

in recognition of this accomplishment

_____

(Signature of Teacher)

_____

(Date)

Place
Mum Kids Sticker
Here

Parent's Page
Mum Fun for Spring

Date:_____

Dear Parent:

You will soon be meeting Millie, Moe, and Minnie, the three "Mum Kids" who are helping to stimulate your child's interest in science, horticulture, and other subjects. The Mum Kids are the principal characters in the **Magnificent Mum Education Program** which is getting underway in our classroom. We are going to be doing hands-on experiments, plant-growing projects, and creative activities with chrysanthemums as the theme. We will also be learning how mums and other plants can help to beautify the school grounds and other places in the community.

As part of the **Magnificent Mum Education Program**, we are going to "Make May Mum Month." The month will be filled with important lessons and fun activities. You are welcome to stop by to see our mum decorations and mum plantings. We would be glad to have your assistance during our mum activities, whether you consider yourself a green thumb or not. ***Please send a note to school with your child if you would like to help.***

You can also help inspire mum fun and plant appreciation at home. Ask your child what he or she has learned from the Mum Kids. Review your child's Mum Book at home. Try some of the activities from the following list.

Thank you for your continued support.

Sincerely,

_____
Your child's teacher

Mum Activities

1. Take walks together around the yard or the neighborhood. Look for buds and other signs that spring is a new beginning.
2. Play "I Spy A Mum Spot." During a walk or ride around the community, pick a spot that could use some beauty from mum plants.
3. Stop in the plant section at a garden center or supermarket. Look for garden mum plants and pot mum plants. Can you find any other flowers that look like daisies (a common mum flower form)? Look for three different items that are used to care for plants.
4. Practice giving health checks on plants in the store and at home. Sharpen observation skills with this 1-2-3 process: Check (1) flowers, (2) leaves and stems, and then (3) take a peek at the roots and soil. ***Be careful not to damage a plant when you do this.*** Some things to look for include color and firmness of leaves, presence or absence of flower and leaf damage, length and strength of stems, and long roots with a healthy white color.
5. Grow your own plants. New mum plants are created by taking stem cuttings from the stem tips of older mum plants. Other plants can also be propagated this way, including angel-wing begonia, coleus, English ivy, geranium, impatiens, and jade plants. Take stem cuttings from one or more of these plants and watch them root in a glass of water.
6. Help nurture garden-based literacy. Pick out some garden stories at the library to read together at home. Look through the garden section of magazines and newspapers to find pictures of pretty spring gardens.
7. Do some plant-helper tasks together, such as watering or weeding, whenever you get a chance.

Parent's Page

Mum Fun for Fall

Date:_____

Dear Parent:

You will soon be meeting Millie, Moe, and Minnie, the three "Mum Kids" who are helping to stimulate your child's interest in science, horticulture, and other subjects. The Mum Kids are the principal characters in the **Magnificent Mum Education Program** which is getting underway in our classroom. We are going to be doing hands-on experiments, plant-growing projects, and creative activities with chrysanthemums as the theme. We will also be learning how mums and other plants can help to beautify the school grounds and other places in the community.

As part of the **Magnificent Mum Education Program**, we are going to have a **Fall Mum Festival**. The festival will be held on _____ at _____. It will be a mum-filled day featuring mum plants, a mum parade, and other fun mum activities. Mum creations made by children in the class will be on display. You are welcome to come to the festival with your family. You are also welcome to stop by our classroom throughout the month to observe our other mum activities, whether you consider yourself a green thumb or not. ***Please send a note to school with your child if you would like to help.***

You can also help to inspire mum fun and plant appreciation at home. Ask your child what he or she has learned from the Mum Kids. Review your child's Mum Book at home. Try some of the activities from the following list.

Thank you for your continued support.

Sincerely,

_____

Your child's teacher

Mum Activities

1. Take walks together around the yard or the neighborhood. How many mum plants do you see? Look for leaves changing color and other signs that the season is changing.
2. Take a family trip to view a mum display at a botanical garden, park, or other public place. How many different color mums do you see?
3. Stop in the plant section at a garden center or supermarket. Look for garden mum plants. Can you find plastic care tags in the pots? Look for the variety names of the mums on the tags. The variety name is often a girl's name or other descriptive name. Is there a mum with the same name as someone in your family?
4. Practice giving health checks on the plants in the store and at home. Sharpen observation skills with this 1-2-3 process: Check (1) flowers, (2) leaves and stems, and then (3) take a peek at the roots and soil. ***Be careful not to damage a plant when you do this.*** Some things to look for include color and firmness of leaves, presence or absence of flower and leaf damage, length and strength of stems, and long roots with a healthy white color.
5. Play "Let's Get Ready For Winter." Get sweaters and coats out to help people get ready. Get bird feeders and seed ready to help birds. Read books to find out what the animals do to get ready. Put straw or pine needles around tender plants for protection and rake up extra leaves to help the trees.
6. Help nurture garden-based literacy. Look up garden mums (chrysanthemums) in garden reference books at home or at the library. Look through the garden section of magazines and newspapers to find pictures of garden mums.
7. Do some plant-helper tasks together, such as watering or weeding, whenever you get the chance.

NOTES

Review Panel for the *Magnificent Mum Education Program*

Special thanks to our panel members across the country who so generously shared their time and valuable insight.

Michelle Phororo, First Grade
Los Serranos Elementary
Los Serranos, California

Erin M. Loganbill, Fourth Grade
Mahaffie Elementary School
Olathe, Kansas

Dottie Hrishenko, Second Grade
Mike Kutsek, Fourth Grade
Donna Marciano, Fifth Grade
Sue Startari, Third Grade
Judie Jo Vayda, First Grade
McClellan Elementary
Pittsburgh, Pennsylvania

Michelle Brunelle, Second Grade
Diana Kinnon, First Grade
Claire Roberts, Seventh Grade
St. Lawrence Martyr
Redondo Beach, California

Kathy Sisk-Frey, Fourth Grade
Georgette Swisher, Sixth Grade
South Fayette Elementary
McDonald, Pennsylvania

Horticulture: A Life Skill and Career for Today and Tomorrow

Horticulture is becoming increasingly important with today's rising environmental awareness and concerns. Horticultural practices can and should be a part of everyday life. Gardening is an enjoyable form of exercise for many people and the presence of plants can help soothe our minds and boost our spirits as well.

In the classroom, horticulture can help teach a variety of subjects. Plant-theme lessons can be integrated into all subject areas, including science, math, reading, social studies, language arts, and art, as well as environmental studies and even fitness. Plant-based learning provides fun and hands-on opportunities for children that can be used to teach practical skills they can use in their everyday lives. Plant studies can even help teach children skills for being good citizens and consumers. Their social skills and civic pride can bloom right along with their science, math, and reading skills.

With increased focus on the world's environment, horticulture is becoming more valuable as a career choice. Options are expanding in sales and technical areas as well as in growing operations. Possibilities range from selling plants, flowers, and supplies to developing computer software for greenhouse ranges or overseeing a research laboratory. Other technical areas include plant breeding and microscopic production of plants from minute plant parts (tissue culture). For those interested in growing, the list of possibilities is long, including the production of cut flowers, blooming plants, green plants, trees, shrubs, fruits, vegetables, herbs, and even specialty items like edible flowers. "Hydroponics" is a fascinating technical growing method that involves growing crops in special solutions rather than soil. There are interesting opportunities as hydroponics become more popular.

Opportunities are just as numerous for floral designers, landscape architects, and professional garden writers and photographers. One newer segment of horticulture that is full of promise and special rewards is horticulture therapy, or helping people with special needs and challenges to enjoy gardening and other growing activities. Indeed, the world of horticulture is rich with opportunities. Many more enthusiastic and dedicated people are needed in horticulture to help keep our world growing and beautiful and our people healthy.

LIMITATION OF WARRANTY— Yoder warrants to the purchaser that Yoder Products sold shall conform to the description on the face of this document, and with respect to plants, Yoder warrants that such plants will be viable when received. ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED AND INCLUDING, BUT NOT LIMITED TO THE WARRANTY OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED FROM THIS CONTRACT OF SALE. PURCHASER SHALL BE LIMITED TO THE AMOUNT OF THE PURCHASE PRICE OF ANY YODER PRODUCT ON WHICH CLAIM IS MADE AS ITS EXCLUSIVE REMEDY FOR BREACH OF THE WARRANTY EXPRESSED HEREIN AND FOR NEGLIGENCE AND OTHERWISE. UNDER NO CIRCUMSTANCES SHALL YODER BE LIABLE TO PURCHASER OR ANY OTHER PERSON FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES.

Mum History and Stories

'Golden Flower' Comes in Many Colors

The showy chrysanthemum, the most versatile of all blooming plants, gets its name from the Greek word ***khrusanthemon***, which means golden flower. Contrary to what the name implies, chrysanthemums aren't just golden and can be found in almost every color but blue.

Mums Around the World: A Quick Overview of History

Mums have been in cultivation in Japan and China for more than 3,000 years. Dutch explorers probably brought the first mums to Europe. Records indicate that half a dozen varieties were grown in Holland in the eighteenth century. Most Europeans, except the French Huguenots, took little interest in the exotic flower. The agriculturally minded Huguenots imported a variety of forms and developed Old Purple, one of the basic mums of European gardens.

In 1764, Phillip Miller of the Chelsea Gardens in England logged the arrival of the yellow Chinese chrysanthemum and its subsequent death. No one seemed to care. Old Purple, the French Huguenots' variety, arrived at the Royal Botanic Gardens at Kew in 1793. Again, few people in England seemed to care. Years later, Robert Fortune, one of England's great plant hunters, brought the Chusan daisy from China in 1846. The English, once again, paid no attention.

The French did take notice of the Chusan daisy and therein lies a fun French tale of ***The Pompon-A Mum in a Hat***. The French improved the Chusan daisy and named its flower form a pompon because it reminded everyone of the wool pompons on French soldiers' hats.

Back in England, Robert Fortune, the plant hunter, tried again. This time he brought a large, shaggy hybrid Japanese mum to English gardens in 1861. At that time, the pompon was finally gaining popularity in England. But it was well into the twentieth century, with the development of the perennial garden mum, that the English accepted the chrysanthemum.

Mums did gain popularity and prosper in the New World. In North America, the Old Purple chrysanthemum was imported in 1798 by John Stevens, a nurseryman in Hoboken, New Jersey. The Chusan daisy was well established by 1850 and the Chrysanthemum Society of America was founded and held its first exhibit in 1902. In 1921, the company that is today the world's leading breeder and propagator of high-quality chrysanthemums, was founded in Barberton, Ohio by Menno and Ira Yoder. The brothers were Mennonite tenant farmers who bought the greenhouses where they worked to start a business. The company was named Yoder Brothers, Inc. and began as a seasonal business, producing fruits, vegetables, and some chrysanthemums in the fall. During the 1930s Yoder started breeding mums. Then, with the discovery that fall-blooming chrysanthemums could be made to flower year-round in the greenhouse by manipulating daylight hours, Yoder's focus turned exclusively to flowers.

Chrysanthemums are now the most popular year-round flowering potted plant in North America. Today's chrysanthemums are far healthier, have stronger stems, and come in a vastly wider range of colors and flower forms than the earlier varieties.

Tales From the Orient

Nowhere outside of North America is the chrysanthemum as popular as in Japan. The tales of how the chrysanthemum attained such notoriety in Japan are fascinating. A Japanese legend tells of a boat filled with 12 maidens and 12 boys who left China seeking the herb of youth to sustain the life of their revered emperor. The voyagers carried a bamboo basket full of golden chrysanthemums, China's most important product, to trade for the life-enhancing herb.

A terrible storm upset their plans, however, tossing them onto one of the islands in the Japanese archipelago. Finding the island uninhabited, the travelers settled down to build an empire. They planted the chrysanthemums, so the legend goes, which may account for the first Japanese garden and the skill and devotion of Japanese gardeners. As legends often contain elements of truth, the story puts the birthplace of mums in China and explains the tradition that the mum was the exclusive possession

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of the Japanese emperor. In 910 A.D., at the first Imperial Chrysanthemum Show, the emperor named the chrysanthemum the national flower of Japan. In 1876, the emperor created the Order of the Chrysanthemum, the highest honor he could bestow. Even today, it is still Japan's highest and most exclusive honor.

World War II democratized the chrysanthemum for the Japanese. Now everyone may grow it and does. It is no longer reserved just for the aristocracy, although it is still a royal symbol.

Even today, when the Japanese say "kiku" — or chrysanthemum — they are as likely to be referring to the imperial crest of their emperor as to the flower. The royal symbol, with its traditional 16-petaled chrysanthemum design, and the flower remain synonymous. Annual chrysanthemum festivals are celebrated in communities throughout Japan each fall, much on the scale of the Oktoberfest in Germany and other harvest festivals throughout the world.

Reference List

Catalogs: *Check your local library*

— W. Atlee Burpee Company • Warminster, Pennsylvania

— Henry Field Seed & Nursery Co. • Shenandoah, Iowa

— Park Seed Company • Greenwood, South Carolina

— White Flower Farm • Litchfield, Connecticut

— Harris Seeds • Rochester, New York

— Spring Hill Nurseries • Peoria, Illinois

— Wayside Gardens • Hodges, South Carolina

Magazines: *Check at a good bookstore, newsstand, or library*

Gardening Magazines
Flower & Garden; Fine Gardening; Horticulture; Organic Gardening; Houseplant

General Interest Magazines that frequently include Gardening Articles
Better Homes & Gardens; Harrowsmith Country Life; Sunset; Southern Living; Family Fun

Books: *Check at a good bookstore or library*

General Gardening Books

— Sunset Books: A series of good basic, colorful, gardening how-to books
Lane Publishing Company, Menlo Park, California

— Ortho Books: A series of good basic, colorful, gardening how-to books
Chevron Chemical Co., San Ramon, California

— Burpee's American Gardening Series: A good series like the above
Prentice-Hall, New York

— *Better Homes & Gardens Complete Guide to Gardening*
Meredith Corporation, Des Moines, Iowa

— *Better Homes & Gardens New Garden Book*
Meredith Corporation, Des Moines, Iowa

— *Reader's Digest Illustrated Guide to Gardening*
The Reader's Digest Assoc., Pleasantville, New York
(has an excellent chapter on chrysanthemums)

— *Rodale's Chemical-Free Yard and Garden*
Rodale Press, Emmaus, Pennsylvania

Garden Related Books

— *Botany For Gardeners: An Introduction and Guide*
Brian Capon, Timber Press, Portland, Oregon

— *Gardening in Containers*
Ortho Books, Chevron Chemical Co., San Ramon, California

— *Simon & Schuster's Guide to Insects*
Dr. Ross H. Arnett, Jr. and Dr. Richard L. Jacquest, Jr.
Simon & Schuster, Inc., New York

— *Gardening by Mail*
Barbara J. Barton, Houghton Mifflin Co., Boston

— *The Able Gardener*
Kathleen Yeomans, Garden Way

Picture Identification Guides

— *Simon & Schuster's Guide to Plants and Flowers*
Fransesco Bianchini and Azzura Carrasa Pantano,
Simon & Schuster, New York

MUM MEMO

For information and advice contact:
National Chrysanthemum Society
Robert Knox • Editor
The Chrysanthemum
P.O. Box 441180
Houston, TX 77244

(continued on back)

BEST COPY AVAILABLE

Field Guides

— Golden Field Identification Guides • Golden Press, New York
— Audubon Society Field Guides • Alfred A. Knopf, Inc. New York
— Peterson Field Guides • Houghton Mifflin Co., Boston

Children's Books

Non-Fiction/Reference

— Scholastic First Discovery Books (such as *The Ladybug and Other Insects*)
Scholastic, Inc., New York

— Eyewitness Explorer Series (includes *Flowers, Trees, Weather*, and others)
Dorling Kindersley, Inc., New York

— Eyewitness Visual Dictionaries (including *Plants*)
Dorling Kindersley, Inc., New York

— *My First Garden Book* - (in visual dictionary format) Angela Wilkes,
A Dorling Kindersley Book, Alfred A. Knopf, New York

— *Kids Gardening* - Kevin Raftery and Kim Gilbert Raftery,
Klutz Press, Palo Alto, California

— *A Kid's First Book of Gardening* - Derek Fell,
Running Press, Philadelphia

— *Your First Garden Book* - Marc Brown,
Little, Brown, and Co., Boston/Toronto

— *The Victory Garden Kid's Book* - Marjorie Waters,
Houghton Mifflin Co., Boston

— *Let's Grow!* - Linda Tilgner,
Storey Communications, Inc., Pownal, Vermont

— *In A Pumpkin Shell* - Jennifer Storey Gillis,
Storey Communications, Inc. Pownal, Vermont

— *Plant Families* - Carol Lerner,
Morrow Junior Books, New York

— *Plant for Pots: Projects for Indoor Gardeners* - D.X. Fenton,
J.B. Lippincott Co., Philadelphia, New York

— *Farming in Boxes* - Peter and Mike Stevenson,
Scribner

Fiction

— *Linnea In Monet's Garden*
Christina Bjork, Illustrated by Lena Anderson,
R & S Books, New York

— *Linnea's Windowsill Garden*
Christina Bjork, Illustrated by Lena Anderson,
R & S Books, New York

— *Chrysanthemum* - Kevin Henkes,
Greenwillow Books, New York

— *The Secret Garden*
Frances Hodgson Burnett, Illustrated by Michael Hague,
Henry Holt and Co., New York

— *The Garden In The City* - Gerda Muller,
Dutton Children's Books, New York

Poetry

— *Shoots of Green: Poems For Young Readers*
Ella Bramblett, Illustrated by Ingrid Fetz,
Thomas Y. Crowell Co., New York

ORDER NO.	
0120	Rooted Garden Mums

CLASSROOM CHRYSANTHEMUMS CUTTINGS KIT

First Cuttings Kit
NO CHARGE

Ship To:

FILL IN SHADED SECTION ONLY	
Name (Print or Type)	Customer No: _____
School/Company	Dist/Slsmn: 99–04
Address	Charge Code: 9
City/State/Zip	Ship Via: UPS
Phone	Placed By: X Customer
	X Gdn. Mums

SHIP DATE: March 7, 19___ Week
(Note: May ship as late as March 15, week)

VARIETY NAME	CODE	QUANTITY
Education Garden Mums	8000	50

HAPPY PLANTING!

Fill in shipping address and phone number. Mail completed form to:
Yoder Brothers, Inc.
Order Entry Dept.
Box 230
Barberton, OH 44203

NO–CHARGE ORDER FORM MAY NOT BE DUPLICATED

FOR INTERNAL USE ONLY:		ORDER	K	DATE ENTERED
Order Taken By: _____		VERIFIED		
	Date			Printed in U.S.A.
Ordered By _____	Taken _____			09/93

ORDER NO.	
0120	Rooted Garden Mums

CLASSROOM CHRYSANTHEMUMS CUTTINGS KIT

Reorder Cuttings Kit - Prepayment Requested

Billing Address:	Ship To Address:
FILL IN SHADED SECTIONS ONLY	
Name (Print or Type)	Name (Print or Type)
School/Company	School/Company
Address	Address
City/State/Zip	City/State/Zip
Phone	Phone
	Purchase Order No.

SHIP DATE: March 7, 19___ Week
(Note: May ship as late as March 15, week)

Customer No: _____
Dist/Slsmn: 99–04
Ship Via: UPS
Placed By: X Customer
X Gdn. Mums

VARIETY NAME	CODE	QUANTITY
Education Garden Mums	8000	50

Fill in shipping address and send payment of
$9.95 plus $3.50 shipping and handling to:
Yoder Brothers, Inc., Order Entry Dept., Box 230, Barberton, OH 44203

HAPPY
PLANTING!

REORDER FORM MAY BE DUPLICATED ANNUALLY TO
PURCHASE A NEW CLASSROOM CHRYSANTHEMUM CUTTINGS KIT

FOR INTERNAL USE ONLY:	ORDER	K	DATE ENTERED
Order Taken By: _____	VERIFIED		
Date			Printed in U.S.A.
Ordered By: _____ Taken: _____			09/93

Garden Mum Variety List

Prophets® by Yoder

Decorative

Autumn Denise	*Red Bronze*
Blushing Emily	*Coral Apricot*
Bravo	*Red*
Christine	*Coral Red*
Cream Nicole	*Yellow*
Dark Grenadine	*Red Bronze*
Dark Triumph	*Bronze*
Debonair	*Lavender*
Denise	*Bronze*
Emily	*Two-Tone Lavender*
Encore	*White*
Fortune	*Yellow*
Ginger	*Bronze*
Grenadine	*Coral*
Harvest Emily	*Orange Bronze*
Jennifer	*Bronze*
Jessica	*Yellow*
Linda	*White*
Lisa	*Yellow*
Lynn	*Two-Tone Lavender*
Megan	*Lavender*
Nicole	*White*
Peachy Lynn	*Orange Bronze*
Radiant Lynn	*Salmon and Violet*
Raquel	*Maroon Red*
Red Remarkable	*Red*
Remarkable	*Red Bronze*
Rosepink Debonair	*Rose Pink*
Royal Lynn	*Lavender*
Sarah	*Bronze (Quilled Decorative)*
Soft Lynn	*Pink*
Sundoro	*Pink*
Sunny Denise	*Yellow*
Sunny Linda	*Yellow*
Target	*Dark Yellow*
Tolima	*White*
Triumph	*Two-Tone Bronze*
Valerie	*Purple*
Viking	*Orange Bronze*
Warm Megan	*Orange Bronze*
Yellow Nicole	*Lemon Yellow*
Yellow Sarah	*Yellow (Quilled Decorative)*
Yellow Triumph	*Golden Yellow*

Daisy

Anna	*Yellow*
Donna	*Yellow (Spoon-Tipped Daisy)*
Golden Grace	*Golden Yellow*
Grace	*Orange Bronze*
Helka	*White*
Illusion	*White (Quilled Daisy)*
Julia	*Yellow*
Kimberly	*Pink*
Naomi	*Pink (Spoon-Tipped Daisy)*
Sandy	*Honey Bronze*
Tanaga	*Bronze (Quilled Daisy)*
Tracy	*White*
Yellow Illusion	*Yellow (Quilled Daisy)*
Yellow Sandy	*Yellow*

Pompon

Barbara	*Purple*
Legend	*Golden Yellow*
Shelley	*Two-Tone Bronze*

Button

Mirage	*Orange Bronze*

*** Some varieties have a combination of flower forms as indicated by the more specific description in parenthesis.*

Teacher Evaluation Form

1. Grade(s) taught? K___ 1___ 2___ 3___ 4___ 5___ Other_____
2. Any area of specialty? (i.e., science, math, reading)_____
3. Did you find the activities age-appropriate? _____
4. Did you find the program suitable for theme-based teaching? What subject areas did you incorporate mum activities into?

   _____

   _____

5. Which lessons did you use? _____

   _____

6. Did you find the activities adaptable to classroom use? _____

   _____

7. Did you find the activities adaptable for use in the community? _____
8. Were you able to establish a working relationship with a local garden center or other plant operation?

   _____

9. Did the Magnificent Mum Education Program increase your use of plants, or desire to use plants, as teaching tools in the classroom?

   _____

10. Do you have more mum ideas that you would like to share with other educators? _____

    _____

11. Do you have a mum story that you would like to share with other educators? _____

    _____

12. Have you had previous plant experience? _____

    _____

13. Any other comments or suggestions? _____

    _____

Optional

Name _____ School _____

Street Address _____

City/State/Zip _____

Phone _____ Fax _____

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TAKE ONE

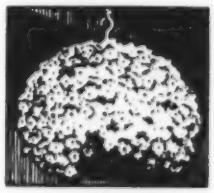
It's Time to Enjoy Garden Mums

Chrysanthemums... America's Most Popular Perennials

Throughout North America, garden mums are known and appreciated as *the* plant for fall blooming. Untold millions of garden mums are planted each spring, summer and fall. With proper care and a bit of help from Mother Nature, garden mums offer the potential to flower again and again every autumn.

VERSATILE USES

BEDDING PLANTS – Garden mums, especially those in the elite Prophets series, are superb for use as specimens in foundation plantings, massed in beds or grouped in plantings of 3 or 5 for colorful and dramatic focal points in the landscape. Versatile garden mums can be planted either as young plants in the spring or as flowering plants in the fall.



HANGING BASKETS – Beautiful garden mum hanging baskets are the talk of any neighborhood or building they decorate. They add a finishing touch to any landscape. Garden mum hanging baskets can be started in the late spring or early summer from young plants, or purchased in bloom for a stunning display of beauty.

PATIO PLANTS – Since the varieties of Prophets garden mums grow into wonderful mounds of flowers, they are perfect for use in containers. Use garden mums on patios, decks, front door steps, in window boxes and by the pool. Garden mums are easily planted while in bud and in bloom into urns, barrels and other attractive containers.

Ask for

Prophets®

Yoder®

43

SEE REVERSE SIDE FOR RECOMMENDED CARE

Garden Mums Recommended Care

GENERAL CARE

PLANTING

- Plant young plants in sunny location (at least a half-day of sun)
- Plant in fertile, well-drained soil. Soils can be improved by adding compost, peat moss or other organic matter.
- Flowering plants can be placed in any location where a splash of color is desired, but will grow best in a sunny location.

WATERING

- Rainfall in many areas is sufficient to keep your garden mums growing well. During dry spells, water as needed to keep plants from wilting.
- Always thoroughly water-in any freshly planted garden mums.
- Garden mums planted outdoors in the fall do not need any fertilizer until they begin to grow the following spring.

FERTILIZING

- During the growing season, incorporate into the soil a general purpose fertilizer such as 5-10-5 at the rate of 1/2 to 1 pound per 100 square feet. Repeat monthly until August. Liquid fertilizer may also be used.
- If planting in the fall, no fertilizer is needed.

PINCHING

- To encourage branching and development of compact bushy plants, it is *very important* to pinch back your garden mums in the spring as soon as the new growth is 4- to 6-inches tall. Use your thumbnail and index finger to remove or "pinch" about 1/2 of the new growth at the top of each and every shoot. Repeat this procedure through the summer whenever new shoots are 3- to 5-inches long. In northern states, stop pinching around July 10th to 15th. In southern states, stop pinching around July 20th to August 1st. (See the illustration on pinching.)

Pinch in early spring to encourage branching for shorter, fuller plants with more blossoms in the fall.

▬ ***Indicates area for pinching.***

Repeated pinching of new shoots until mid to late July is important for developing plants which will be sturdy and full of flowers in the fall. After the last pinch your garden mum will grow to be more than double in size.

WINTER PROTECTION

- Keep your garden mums' soil moist as winter approaches.
- There is no need to prune back plants until the following spring.
- Mulch the plants after several hard frosts with straw or evergreen branches, etc.
- In the spring, remove any old garden mum stems (a rake works fine) and gradually remove the mulch.

Prophets® Yoder®

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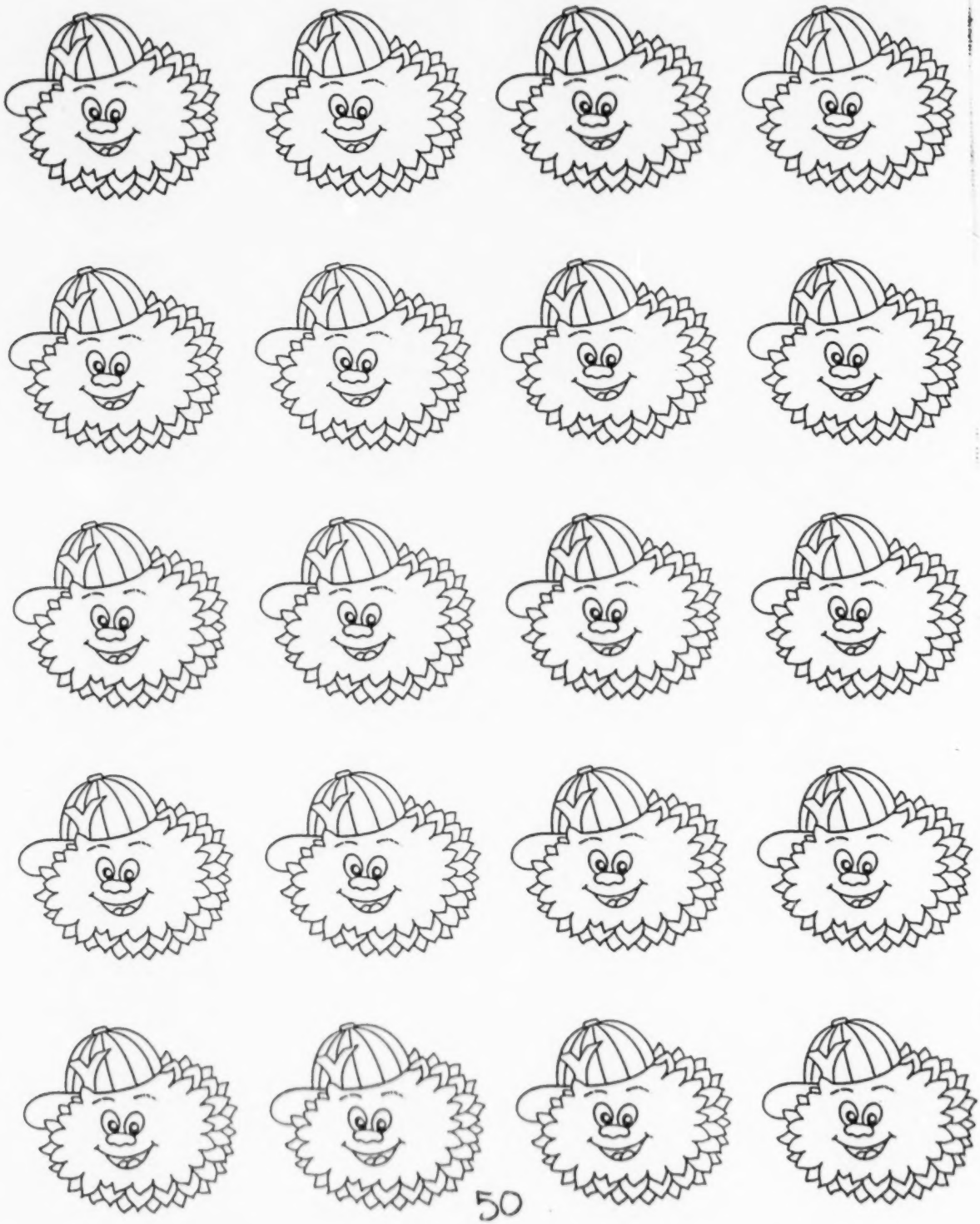

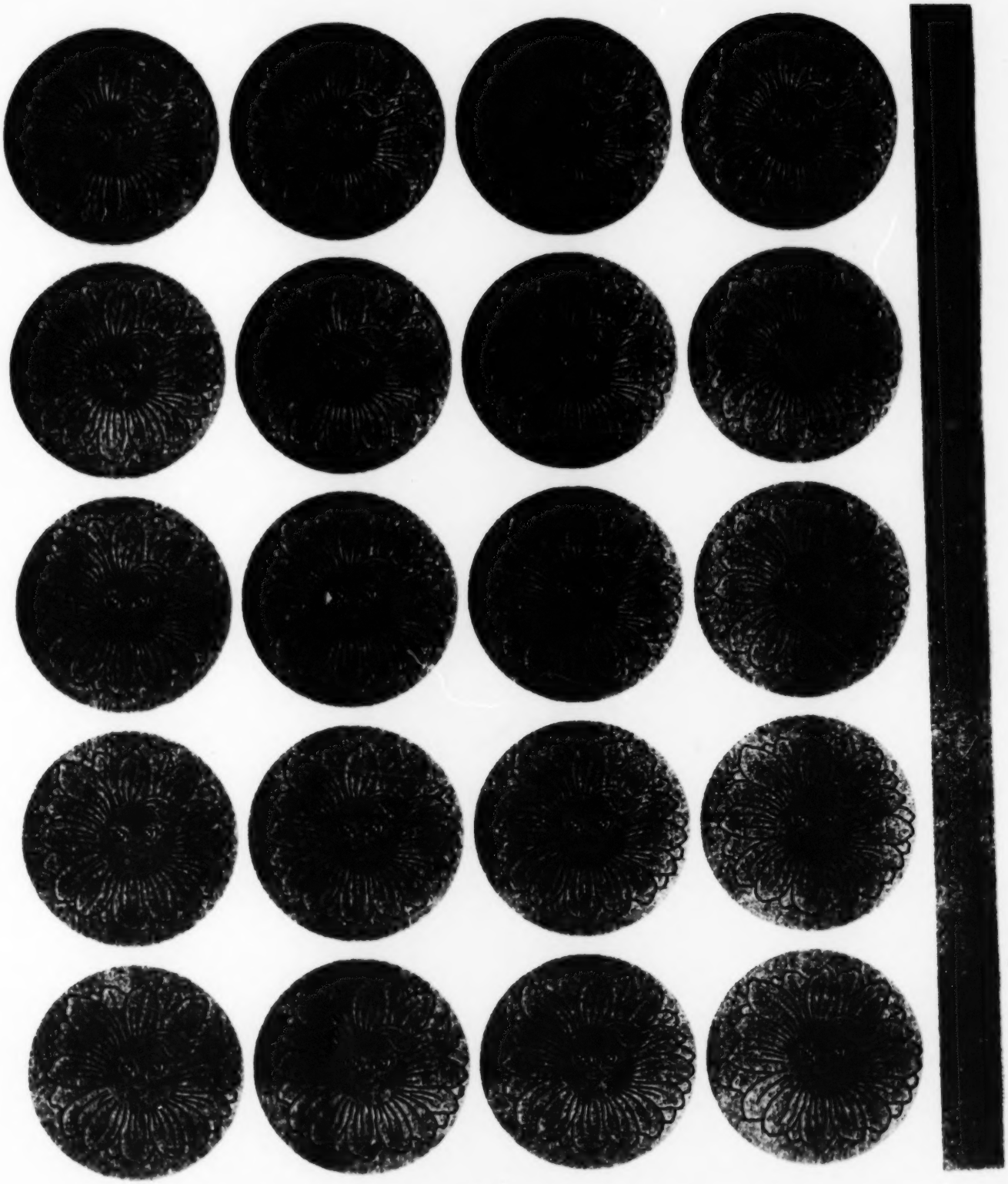

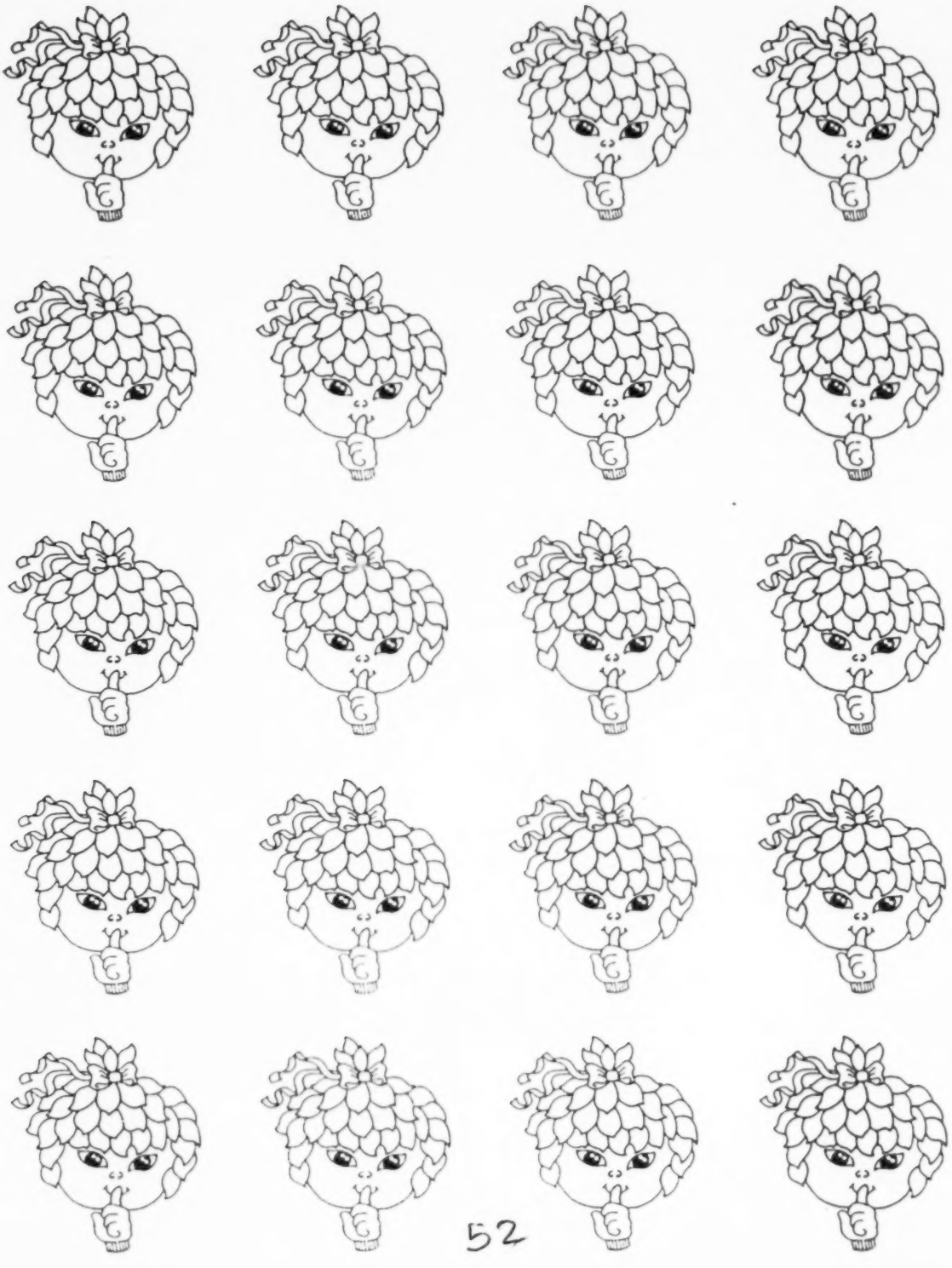

NEW

LYNN

(Pat. Pend.)

GARDEN MUM

Prophets®

"Series by Yoder"

New *Prophets®* garden mums have been bred and selected for superior garden performance.

Cultural tips: Late Spring — transplant outside into well drained soil in a sunny location. Between spring and mid-July pinch back new growth 2-4 times. **Summer** — fertilize monthly until buds begin to show color. **Fall** — prepare the soil well before planting. Water newly planted garden mums to help establish new roots. Add new Prophets® garden mum varieties each year to your collection. **Winter** — mulch plants when the soil begins to freeze. **Early Spring** — remove mulch gradually and cut back old branches.

Unauthorized Propagation Prohibited

YBX2748